94TH CONGRESS } HOUSE OF REPRESENTATIVES { REPORT
2d Session } { No. 94-1461

SOLID WASTE RESEARCH AND DEVELOPMENT ACT OF 1976

SEPTEMBER 1, 1976.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

Mr. TEAGUE, from the Committee on Science and Technology, submitted the following

REPORT

together with

ADDITIONAL VIEWS

[Including cost estimate of the Congressional Budget Office]
[To accompany H.R. 14965]

The Committee on Science and Technology, to whom was referred the bill (H.R. 14965) to amend the Solid Waste Disposal Act to provide certain authorities respecting research, development, and demonstration, and for other purposes, having considered the same, report favorably thereon with amendments and recommend that the bill do pass.

The amendments are listed and explained in "Committee Actions".

1. PURPOSE OF THE BILL

The purpose of the bill is to broaden the authority of the Environmental Protection Agency to conduct research on specific aspects of solid waste management and resource recovery; to provide for special studies; to provide for a program of information collection and dissemination; to ensure the coordination of solid waste research goals with regulatory and implementation policy.

57-006

CONTENTS

2. Explanation of the Bill

BACKGROUND

This background section contains a brief, selective recitation of some of the pertinent facts pertaining to solid waste.[1] A comprehensive discussion would be too massive for a legislative report—rather, an attempt is made to present some illustrative information indicating that this is a large problem, in which additional legislation is needed.

Included below is a discussion of the sources and characteristics of the solid waste stream; of how it is disposed of and what this disposal costs; of the adverse environmental impacts that can result from improper disposal; and finally of the resources—materials and energy—that can be recovered from solid waste.

About 2.8 billion tons of solid waste are generated every year in the United States. Of this, about 1,783 million tons are from mining; 687 million are agricultural; 135 million are municipal; 260 million are industrial; and 7.3 million are sewage sludge. The two smallest categories, municipal waste and sewage sludge, are certainly not the least important. Management of municipal waste is important because it is highly visible, is generated in areas with limited storage space. and, if not handled correctly, presents a threat to the public health. Nearly 80 percent of municipal waste is combustible and if used to produce energy it could amount to about 1.5 percent of the Nation's energy consumption. Of the remaining 20 percent, about 10 percent is glass, 9 percent metal, and 1 percent miscellaneous.

Looking at the municipal solid waste stream in another way, about 80 percent is derived from market products as opposed to yard and garden sources. Excluding discarded food materials, discarded market materials account for 60 percent of the solid waste stream and this amounts to about 70 to 80 million tons annually. Waste reduction and material recycling programs are principally direct to this 70 to 80 million ton fraction.

About one-third of this post-consumer solid waste is container and packaging materials, 72 percent of the metal and glass in this fraction is composed of container and packaging materials.

Consumer durable goods—appliances, furniture, etc.—account for 10 to 12 percent of the municipal solid waste stream, while newspapers, books, and magazines account for about 8 percent.

---

[1] In preparing this section several documents were used as sources and are recommended to the reader interested in further information: (1) Materials Relating to the Resource Conservation and Recovery Act of 1976, Committee Print, Committee on Interstate and Foreign Commerce, U.S. House of Representatives, April, 1976. (2) GAO Report to the Congress: Using Solid Waste to Conserve Resources and to Create Energy, Comptroller General of the U.S., Feb. 27, 1975, No. RED–75–326. (3) Third Report to Congress: Resource Recovery and Waste Reduction, U.S. Environmental Protection Agency, 1975, No. SW–161.

Raw municipal refuse has a typical heating value (energy content) of about 4600 British Thermal Units (BTU) per pound. If the metal and glass fractions are removed the heat value is about 5500 BTU per pound. For comparison, coal yields 12000 BTU per pound on the average. The ash content of the refuse with glass and metal removed is about 5 percent, comparable to coal on a per-pound basis but about twice that of coal on a per-BTU basis.

Collection of municipal solid waste (commercial and residential) is a major aspect of solid waste management. On a national average basis it costs about $21 a ton to collect solid waste and about $5 a ton to further process and dispose of it in landfills. Thus, nationally this implies a direct cost of about $3.5 billion to collect and dispose of municipal solid waste, of which $2.8 billion is for collection.

In 1974, 61 percent of cities having over 10,000 population operated a residential collection system and 39 percent also collected commercial waste. Where there is no city-operated system private haulers perform the service. Private haulers collect about 50 percent of residential and 90 percent of commercial waste. Residential collection is largely manual, commercial collection is more mechanized.

Frequency of collection is twice a week in half the cities surveyed and once a week in most other cities. Once a week collection can reduce costs by nearly 50 percent.

It is believed that most municipal solid waste is still disposed of in open dumps or landfills that could not be considered truly sanitary landfills. Sanitary landfilling is a disposal method engineered to minimize environmental insults. Properly conducted, the waste is spread into thin layers, compressed, and covered with compacted earth. Few landfills have been engineered to minimize leachate problems, because this problem has only recently been recognized. However, it is now being found that water seeping through a landfill can dissolve toxic materials, etc., and cause pollution of both groundwater and surface water. Designing landfills to control leaching problems will undoubtedly raise the cost of this method.

Industrial wastes, because they tend to be concentrated and relatively uniform, are largely recycled where recycling is feasible. Collection of industrial waste generally seems to be more mechanized and efficient than municipal collection. Problems arise when flammable, toxic, corrosive, or otherwise hazardous industrial wastes must be dealt with.

Disposal of solid wastes, including hazardous wastes, can have adverse environmental impact in several ways. The following paragraphs discuss five different types of such impacts.

(i) Perhaps the most pernicious effect is the contamination of ground water by leachate from land disposal of waste. About half of the U.S. domestic water supply is from underground water, and thus is potentially subject to contamination. Such contamination is especially vexing because often it is discovered after the damage is done and because the contamination is very long lasting. Thus leachate from a landfill or dump may not show up for years, maybe not even until after the landfill has been closed. However, once a contaminant is in an aquifer it can take decades or centuries to migrate out. Such considerations may make it difficult if not impossible to assign responsibility and recover damages or costs of rectifying the situation.

(ii) Similar pollution of surface waters may occur when water runs off landfills or dumps. Surface water pollution may be simpler to deal with because such long times are not involved. Runoff can also transport pollutants and contaminate crops or pastureland if the water is used for irrigation.

(iii) Solid waste disposal can contribute to air pollution through open burning, incineration, evaporation, or sublimation, and wind erosion. One should add to this the problem of generation of obnoxious odors from open dumps and from other facilities that might be well-designed but that are poorly operated.

(iv) There have also been several cases of acute poisoning when hazardous materials were improperly disposed of, and individuals or animals subsequently came into contact with them.

(v) Fires and explosions are the final example of adverse environmental impact. Open dumps and landfills are often the site of unwanted fires which may be very difficult to extinguish if the burning is occurring beneath other wastes. In cities, the improper storage of solid wastes is involved in many fires which result in loss of life and property, and add indirect costs to the direct costs of solid waste management. For example, in 1972, improper storage of solid waste was an attributed cause of 34% of fires in New York City and 47% of fires in Washington, D.C.

Many of the problems and costs mentioned above would be mitigated by a reduction in the amount of waste generated. The cost of collection and disposal of wastes depends on the amount of waste involved. In the future it is clear that (i) costs of collection will rise; (ii) in many areas it will be more and more difficult to find landfill sites; and (iii) it will be more difficult for landfills and incinerators to meet pollution control regulations. Thus it seems only logical that reduction in the amount of waste generated should be considered as an approach to mitigating the solid waste problem.

Another way to reduce the amount of material to be disposed of is to increase recycling. This means less new landfill will be needed, and less pollution from landfills and incinerators will result. The general term used, "resource recovery," refers to the extraction of any resource, including energy, from the solid waste stream. Resource recovery is thus a very broad concept which could include recovery of heat (energy) from an incinerator or extraction of iron and steel scrap from waste. One also includes in this category "source separation" efforts in which the persons or establishments generating the wastes also separate the wastes. This separation at the source keeps the wastes cleaner and thus makes them more easily recycled. For example, if paper is not separated at the source, it often cannot practically be recycled as paper (but can only be burned) because during collection and handling the paper is too degraded by mixing with other components of the waste stream.

U.S. consumption of resources, both materials and energy, continues to increase. So does our importation of various materials. For example, consider how much of its consumption of various metals the U.S. imports: 100% of our chromium consumption; over 90% of aluminum; about 80% of tin; about 70% of nickel, about 50% of zinc; and about 30% of iron and lead. From this one can see that recovery and recycling of some materials can have an impact far beyond local solid waste

disposal problems. It is not anticipated that recycling will replace importation of these materials, nor is it suggested that this a primary reason for recycling. Rather the contribution that recycling can make to reducing our dependence on foreign materials supplies may be thought of as a "free" benefit from solving local solid waste disposal problems.

There is considerable room for improvement in recycling practices—only about 20% of paper is recycled; only about 8% of post-consumer and commercial ferrous metal is recycled, and only about 1% of aluminum. There is very little recycling of other metals from the post-consumer solid waste stream although there is some recovery from industrial scrap.

Recovery of energy from solid waste is also in its infancy—EPA projects that even by 1980 only about 8% of the energy from "available" solid waste will be recovered. By "available" they mean waste generated in densely populated areas where neither the waste nor the energy or fuel need be transported long distances. The energy in this waste is not trivial, amounting to about five percent of the fuel consumed in utilities, or 28 percent of the oil expected to be delivered through the Alaskan pipeline. Various approaches are known for recovering energy from waste: One can incinerate the waste and produce steam in a water-wall incinerator, or one can process the waste to produce a solid, liquid, or gaseous fuel.

Another interesting option is being tried in Seattle where methane produced from waste will be converted to ammonia. This is related to energy needs because the natural methane (natural gas) that would have gone into producing ammonia is instead available to be used as a clean fuel.

A problem common to all resource recovery systems, whatever the resource recovered—steam, fuel, ammonia, scrap iron, paper, or other—is finding a dependable market at a price that will pay for the costs involved. The need to establish and maintain a stable market for recovered resources cannot be overemphasized.

FEDERAL PROGRAMS

The Environmental Protection Agency now conducts a program under the Solid Waste Disposal Act of 1967 (P.L. 89-272) as amended by the Resource Recovery Act of 1970 (P.L. 91-512). The present EPA program emphasizes three areas: The first area is land disposal and its environmental problems, particularly those posed by hazardous wastes, ground water contamination, and disposal of sludges from air and water pollution control operations. The second area is technical assistance to the states. The third area includes means of reducing the volume of waste that must be disposed of. This involves efforts to reduce waste generation, as well as efforts to increase resource recovery. In FY 1976 EPA's solid waste budget was about $14,500,000.

The Energy Research and Development Administration has a program to develop technologies for recovering energy or fuels from solid waste. The ERDA program is aimed at broadening the range of choice of energy recovery technologies available to officials responsible for solid waste management. This includes broadening the range of

possible energy end products, to provide for more flexibility in finding a market for these products. In FY 1976 ERDA's budget for solid waste was approximately $4,500,000.

The Bureau of Mines has a program for recovering resources from waste materials. Their program has worked with mining and industrial wastes as well as municipal wastes and special problems such as discarded autos. Over the years the Bureau of Mines has developed a great deal of expertise in this area which EPA has utilized in many cases by contracting with the Bureau.

The Bureau of Mines level of effort on processing, recovery, and utilizing materials found in municipal and industrial refuse in FY 1976 was $770,000. In addition, the Bureau allocated $1,320,000 for related investigations dealing with processing and recovering useful materials from slags, dusts, solutions and other wastes from metallurgical processes.

Several other agencies have small programs: The Federal Energy Administration, National Science Foundation, National Aeronautics and Space Administration, Department of Housing and Urban Development, and Tennessee Valley Authority. The total spending in these five agencies in FY 1975 was about $1 million.

RATIONALE FOR LEGISLATION

Although the need for reducing costs of solid waste management and the potential benefits of resource recovery would seem to lead to the adoption of new approaches, most solid waste seems to be treated now much as it has been in the past. Although there are Federal programs in place, they do not seem to be causing a broad adoption of resource recovery at the local level. Therefore it is felt that additional legislation is needed not to authorize new R.D. & D. activities, because the authority in the existing legislation is broad. Rather new legislation is needed to direct R.D. & D. activities at specific problems.

Many treatments of solid waste problems emphasize the economic barriers to resource recovery such as the need to finance a risky venture, the need to ensure a large enough waste flow to make a given facility economically viable, and the problem of marketing the recovered products whether steam, fuel, or scrap. However, such barriers are not without their technological components. That is, in many cases the barriers can be avoided by improving the technology.

Some examples will illustrate what is meant by this.

In the case of financial risk, part of the risk arises because the technology is not proven. In some cases this risk may be only perceived, not real. A program of demonstration projects will help to reduce this risk or its perception by proving the technology.

Another barrier often cited is the need for a capacity of at least 300 tons of waste per day in order to make resource recovery plants economically practical. This makes resource recovery uneconomical in sparsely populated areas because of the high costs of hauling the waste long distances. However, this limitation is, at least to some extent, merely a statement of the present state of the art. Development of new small-scale technologies could lower this limit. Such development efforts are provided for in the bill.

Markets for recovered materials also have a technological aspect. This is true for two reasons. First, the market depends to some extent on the quality of the recovered material—purity, uniformity over time, etc. This is determined in part by the technology used to recover the wastes. Second, for external reasons markets may change over time, and a resource recovery system should have the flexibility to change its end product. Again, this flexibility is to some extent technology-dependent. The bill would address both these areas.

Another reason for slow adoption of resource recovery seems to be due to the fact that available information is not being used. Most local officials do not have the competence or the time to analyze and synthesize technical reports in order to decide what is best for their local situation. This is especially critical when the reports are conflicting. To address this problem the bill provides for an active program of information collection, analysis, and dissemination.

Several specific areas of resource recovery seem to be receiving what might be called "benign neglect." For example it is often stated that recovery of plastics is very difficult and they have a high heat value so the best thing to do is to burn them. However, the raw materials that go into most plastics come from oil and coal, and are not renewable. It seems that it would be advisable to do a careful study of this situation and make a conscious decision of whether or not to proceed with a research program aimed at developing ways of recovering and sorting various plastics. The bill provides for several such studies which would be formal input for planning research, development and demonstration programs. As the studies would be published, the planning process would also have the potential benefit of broad public comment on the reports.

PROVISIONS OF THE BILL

The following is a brief, narrative description of the provisions of the bill, which is an amendment to the Solid Waste Disposal Act, as amended.

Title: The short title of the bill is the "Solid Waste Research and Development Act of 1976."

Findings: The findings present a concise statement of the need for the bill: Growth has resulted in more waste and urbanization has concentrated it. As a result many cities will soon be running out of suitable landfill sites unless something is done. Improper disposal can endanger public health, and damage the environment. In addition, our increasing efforts to control air and water pollution will develop new wastes—sludges of various types. On the other hand, recycling and reuse of materials in waste can both reduce disposal problems and conserve our resources. Energy can also be recovered from many solid wastes. Unfortunately, at this time resource recovery activity seems to be scattered, and local governments are carrying most of the solid waste burden. The Federal government could greatly assist local governments by developing and making available technical information. Further, federal programs of research, development and demonstration are needed to ensure that the technological problems of solid waste management and resource recovery are solved.

Definitions: Two new definitions are added by Section 3. "Demonstration" is defined in order to limit construction of full-scale facilities to the initial exhibition of a new or improved technology. The purpose is to ensure that EPA's limited resources for demonstrations are used to advance the state-of-the-art.

"Sludge" is defined very broadly to include any semisolid waste, or similar material.

General Research Authority: Subsection 4(a) amends subsection 204(a) of the Solid Waste Disposal Act. Subsection 204(a) of the Act contains the general research, development, and demonstration authority of the existing legislation and the effect of the amendment is to emphasize the new areas of research and other activities to be authorized. These new areas are: (i) small scale and low technology systems for solid waste management and resource recovery; (ii) improving the utility and marketability of recovered materials (e.g., improving the uniformity or purity of recovered scrap); (iii) improving land disposal practices to reduce adverse environmental impacts of such practices; (iv) methods for the sound management of sludge; (v) methods of hazardous waste management; and (vi) adverse effects on air quality due to burning solid waste.

Subsections 4(b) and 4(c) of the bill strike subsections 204(b) and 204(c) of the Act, and replace them with new provisions. Where new provisions replace the old, they are either simpler, modified, or in some cases greatly expanded. The following few sentences describe the changes, while the new provisions are described below in more detail. Paragraph 204(b)(1) of the act authorized the Administrator to collect and disseminate information. This authority is moved to new section 204B of the bill. Briefly, the existing language is general authority to collect and make available information while the new provisions, described more fully below, give the Administrator more instructions and provide for a more aggressive effort directed at information users. Subsection 204(a) and paragraph 204(b)(2) of the act authorized cooperation with other agencies, this authority was struck from 204(b)(2) but remains in 204(a) of the Act. Paragraph 204(b)(3) of the Act authorizes grants and contracts. This authority is now found in new paragraphs 204(c)(1) and 204(c)(2) of the bill. Subsection 204(c) of the Act provides for disposition of patent rights, etc., according to the Statement of Government Patent Policy which was promulgated by the President in his memorandum of October 10, 1963. The Committee feels that rights to patents should be governed by law rather than by executive memorandum. Therefore, patent rights, etc., are covered in new paragraph 204(c)(3) of the bill, which states that the relevant provisions of the Federal Nonnuclear Energy Research and Development Act of 1974 shall apply.

Subsection 4(b) of the bill strikes the existing language of Section 204(b) of the act and replaces it with the following provisions: Paragraph 204(b)(1) provides that the Administrator shall develop and operate a management scheme to ensure that good research ideas proceed expeditiously through development and demonstration. Of course, as ideas are tested, impractical ones should be dropped. This is a "pipe-

line" concept—the analogy being that ideas go in one end of the pipeline and proven hardware or practice comes out the other.

The second paragraph (204(b)(2)) provides specific guidance to the Environmental Protection Agency and to the Energy Research and Development Administration concerning coordination of their activities in resource recovery from solid wastes. The bill refers to the Interagency Agreement between EPA and ERDA on the Development of Energy from Solid Wastes, and provides that energy-related activities shall be governed by the agreement. The paragraph goes on to make four additional specific provisions: Clause (A) provides that the two agencies shall conduct joint planning, following which project responsibility will be assigned to one agency. This explicitly recognizes that a project must have a single leader, and, by providing for joint planning implicitly recognizes that many projects will be to some degree energy-related and will to some degree have environmental impacts. EPA's experience and technical skills relating to disposal technologies that involve energy recovery and extensive work on institutional arrangements with State and local governments should be considered when determining lead responsibility for these projects. Clause (B) provides that ERDA will have lead responsibility for input and evaluation of the energy research related portions of projects involving energy recovery from solid waste. The intent of (B) is not to undo what (A) accomplishes; rather the intent is to recognize ERDA's responsibility to develop an overall, national energy R. D. & D. strategy. Thus even if a particular project is not primarily energy-related, and is therefore assigned to EPA (as a result of joint planning), nevertheless, EPA must keep ERDA informed of progress and results. and permit ERDA to contribute to the planning, oversight, and evaluation of the energy-related aspects of the project. Clause (C) provides that EPA shall retain responsibility for the environmental, economic, and institutional aspects of solid waste projects, and shall retain the responsibility for assuring that such projects meet applicable guidelines, State plans, etc. Just as the intent of (B) is not to undo what (A) accomplishes, similarly (C) should be read in the context of (A). Thus even if the two agencies agree (as a result of their joint planning activities) that a project is primarily energy-related, and responsibility is assigned to ERDA, still the EPA must be permitted by ERDA to assure itself that the project is consistent with protection of public health, etc, and therefore must be kept informed of progress and results, and contribute to the planning, oversight, and evaluation of the project. Clause (D) provides that in carrying out the special studies under Section 204A of the bill and the information program under Section 204B of the bill, EPA shall coordinate and consult with ERDA on energy-related matters. With respect to these special studies, EPA should work closely with ERDA during the course of each study and make the results available to ERDA. With respect to information activities, clearly the purpose of this provision is to ensure that EPA and ERDA work together in developing information on energy-related projects, and to provide consistent advice to users of the information such as local officials.

It should be further emphasized that in carrying out paragraph 204(b)(2) of the bill each agency should make available to the other all information concerning any project, or plans for any project, and should permit and encourage observers from the other agency to visit and review any project related to solid waste.

Subsection 4(c) of the bill strikes the existing language of subsection 204(c) of the act and replaces it with the following provisions: Paragraph (1) authorizes the Administrator to make grants or contracts in carrying out the purposes of this act. Paragraph (2) provides that contracts shall be made pursuant to the provisions of title 10, USC section 2353. This is the law governing military contracts and this provision was in the original language of existing Section 204. Paragraph (3) provides that patents resulting from activities carried out under this act shall be handled in the same way as patents resulting from research under the Federal Nonnuclear Energy Research and Development Act of 1974. This is intended to facilitate EPA–ERDA cooperation by providing for uniform treatment of patents, and to allow the Administrator some flexibility in deciding how patent rights should be handled to best achieve the goals of this Act.

Section 5 of the bill amends the Solid Waste Disposal Act by adding new sections 204A, 204B, 204C, and 204D after section 204.

Special Studies: Section 204A provides for eleven special studies to be carried out by EPA in the next two years. The intent is to generate documents which will be the basis for decisions and plans concerning research, development, and demonstration. It is conceivable, for example, that a study might conclude that no action under this bill is called for in a certain subject area, either because no practical technology is available, or likely to be developed in the subject area, or conversely because the area is ready for private, commercial implementation (and thus beyond the scope of R., D. & D.). In any case these studies should provide a clear, open basis for policy decisions.

Subsection (a) provides for a study on glass and plastic recovery. Both these areas are technically difficult and research will be needed to develop practical techniques for their separation and recovery.

Subsection (b) provides for a systematic study of the composition of the solid waste stream. In carrying out this study, representative samples of real solid waste should be studied. The analysis of the composition should indicate where the greatest benefit can be obtained from resource recovery. For example, is it better to recover paper as paper or to recover the inherent energy by using the paper as an energy source? Clearly to answer this question one must look at the way paper is actually found in solid waste.

Subsection (c) provides for a study to determine which existing technologies are ready for implementation, which need more development, etc.

Subsection (d) provides for a study of small scale and low technology resource recovery systems. The intent is to consider, for example, small systems which might be utilized in apartment complexes and reduce collection and hauling costs. Further, systems requiring only small capital investment should be considered.

Subsection (e) provides for a study on the compatibility of low-technology and high-technology system. That is, one can foresee a situation in which some waste would be sorted before collection (households might segregate glass or newspapers for separate pickup). The balance of the waste would then go to a central facility for further processing, separation, etc. Thus the incoming waste stream would vary depending on the success of source separation efforts. The purpose of this study is to explore the sensitivity of such central processing facilities to the changing composition of the incoming solid waste stream. The goal is to insure that large, capital-intensive centralized facilities are designed to operate efficiently over some range of composition of waste input.

Subsection (f) provides for a broad study on the adverse effects of mining wastes. The Committee intends that this study should be carried out by EPA in cooperation with the other Federal agencies involved, especially the Bureau of Mines and ERDA.

The intent is for EPA to look at all mining waste disposal practices, past and present, identify the adverse effects of such wastes on the environment, including people and property located beyond the boundary of the mine, evaluate the adequacy of those practices from a technical standpoint, including the adequacy of governmental regulations governing such disposal, and make recommendations, including recommendations for additional R&D, for improvement of such practices and, where appropriate, for the development and utilization of alternative means or methods of disposal that are safe and environmentally sound. Clearly, EPA should not assume that the current waste disposal practices are environmentally or technically sound. Furthermore, it is intended that economic considerations not be the governing criterion for the development of recommendations for improved or alternate practices of waste disposal from active and abandoned mines.

Subsection (g) provides for a study of "sludge." Sludge is generated in a variety of industrial processes, pollution control processes, and other processes, such as transportation of coal by slurry pipeline. A larger and larger volume of sewage sludge, scrubber sludge, and perhaps coal sludge will have to be dealt with in the future. This study should provide the start in planning for how to deal with this problem, how to manage the sludge and, where possible, to recover resources from it.

Subsection (h) provides for a study on waste tires. This study should determine how best to deal with discarded tires and how to extract the resources they contain.

Subsection (i) provides for a broad study to focus on why resource recovery facilities are not being more rapidly constructed and put into operation. The study should also examine the premise that resource recovery is not growing at a rapid pace—perhaps resource recovery is being implemented at a higher rate than it appears. The study should provide a broad, guiding policy framework for the EPA R,D&D program, a framework into which more detailed projects would be expected to fit.

Subsection (j) provides for a study of methods for waste reduction which could be voluntarily implemented. This study should consider the broad implications of waste reduction, for example how jobs and markets would be affected. In providing for voluntary implementation the intent was to encourage EPA to seek waste reduction approaches which would be obviously beneficial to all concerned, thus likely to be voluntarily implemented.

Subsection (k) provides for a study of a hazard which is surprisingly prevalent across the United States. That is the hazard presented to aircraft by birds feeding at landfills or dumps. Apparently, many such disposal sites are located near municipal airports. The study should recommend measures to alleviate this problem.

Subsection (l) provides that the reports under (b), (c), (d), (e), (f), (g), and (k) be completed by October 1, 1978, and that the rest of the reports be completed by October 1, 1979. This subsection also provides that the study results be incorporated into research planning as provided for in section 204D.

Technical Information: Section 204B of the bill provides for a comprehensive, active technical information program in EPA. The intent is that all useful information regarding solid waste management and resource recovery be collected and made available. Emphasis is given to information on the operation of full-scale facilities (as opposed to theoretical or pilot plant information). Subsection (a) provides for the collection and coordination of such information. Subsection (b) provides for a central library where such information shall be available, and for a program of analyzing and synthesizing the information and publishing it. Such publications should be in a form useful to local officials responsible for solid waste management. Subsections (c) and (d) provide for the development of model accounting systems and model codes to help local officials carry out their responsibilities in solid waste management.

Subsection (e) provides that EPA shall ensure that results of its activities are made available to planners and decision makers.

While it is intended that EPA develop an active information dissemination program under this section, it is not intended that EPA use these provisions to force any particular point of view or technology on any interested party. It is intended that EPA actively participate in outreach programs such as technical assistance in order to ensure active, rather than passive, dissemination and application of information.

Full-Scale Demonstrations: Section 204C of the bill provides limits and guidelines to EPA in the execution of its program of demonstration of full-scale facilities. The section provides that before a full-scale demonstration project can be funded, the Administrator of EPA must make a finding that: (1) the technology or practice to be demonstrated is new, or substantially new, or improved in a significant way; (2) the assistance is authorized under section 204; (3) the facility will meet all applicable regulations and guidelines; (4) the facility is not likely to be constructed without EPA's assistance; and (5) the Federal interest in or support of the project will be terminated in a timely and appropriate manner, with compensation if necessary. The section

places time limits on funding of full-scale demonstrations: Funds can not be obligated for assistance after ten years after enactment, and funds cannot be expended after fourteen years after enactment. Thus a project begun (funds obligated) just before the end of the ten year period could be supported for four more years (for construction and test operation). However the intent is to limit the Federal participation in such full-scale facilities. Fourteen years should be sufficient time to demonstrate the benefits of resource recovery. Further, it is hoped that by providing for this cut off, EPA will be encouraged to mount an effort of some intensity.

The section provides for and encourages cooperative funding of demonstrations. It is felt that in many cases a small amount of Federal assistance will get a project off the ground, and the intent is to make that assistance available.

In some cases interesting and useful information can be obtained by monitoring and reporting on the performance of an existing resource recovery system. The section encourages EPA to adopt this practice—in effect to declare some facilities demonstration projects and to document their performance. In other words, EPA need not finance or construct a facility to make it a demonstration project. They might merely put an observing team and instruments on-site for a period of time, which would be much less expensive than constructing a facility. Of course, EPA would have to secure the permission and cooperation of the owner or operator of a facility before declaring it a demonstration.

Finally, the section provides that EPA shall not run full-scale demonstrations in-house. The intent is to emphasize the need to get new technologies out of Federal laboratories and into private companies or local governments.

Intra-agency Coordination: Section 204D of the bill provides for a formal, permanent, responsible mechanism within EPA for assuring that research development, and demonstration goals are consistent and compatible with (i) agency policy, actions, and plans relating to regulation, enforcement, or local assistance in solid waste management and resource recovery; (ii) resources (funds, staff, facilities) available for research, development and demonstration; (iii) the state-of-the-art; and (iv) similar work being done elsewhere. This section does not assume any particular split of responsibilities within EPA, but does anticipate that different parts of the agency will have different responsibilities, and the purpose of the section is to ensure that all parts have the same goals. Two examples may be helpful. First, as a new concept for resource recovery matures from a research idea, through engineering development, and into demonstration hardware, responsibility for the concept may cross from one part of EPA to another. The basic goals should not change when organizational lines are crossed. (This intent is also expressed in Sec. 204(b)(1).) A second, and perhaps more pertinent example, arises in the area of water pollution. Landfills present potential problems of water pollution. The agency thus may have two approaches to water pollution—one from solid waste disposal, the second based on regulatory authority under the Federal

Water Pollution Control Act (PL 92–500). In many cases the research needed will be common for the two approaches (e.g., development of measurement methods). The EPA program of water pollution research should address all potential uses of research information.

Thus section 204D provides that the Intra-agency Committee be composed of EPA research, development, and demonstration officials of all kinds, and regulatory and implementation officials involved in EPA solid waste programs.

It is not the intent of section 204D to provide for day-to-day supervision, but rather to ensure consistent, long-range direction to the R, D & D, program. Recognizing that agency research goals may be strongly impacted by budget restrictions, and that availability of budget authority may be influenced by the convincing demonstration of need for research results, the bill provides that the Intra-agency Committee participate in budget formulation.

Authorization of Appropriations: Section 6 authorizes appropriations for activities under sections 204, 204B, 204C, 204D, and 205 in the amount of $35,000,000 for fiscal year 1978. These sections cover research, development, and demonstration, and information programs (except for special studies covered below). For new section 204A, which provides for special studies, a total of $10,000,000 is authorized for fiscal years 1978 and 1979. As all the studies should be completed by the end of fiscal year 1979, no further authorization is anticipated for these studies.

Sunshine Regulations: Section 7 of the bill adds a new section 217 to the Solid Waste Disposal Act. This new section provides that EPA officials in policy or decision-making positions shall make a disclosure of all financial interests in any person applying for assistance under the act.

The provision requires officers and employees of EPA who perform any function under the Solid Waste Disposal Act to file annually statements of any known financial interest in the persons subject to that Act or who receive financial assistance under that Act. Such statements would be available to the public and would have to be reviewed by EPA. Positions within EPA that are of a non-policymaking nature could be exempted from this requirement by the Administrator.

The provision does not prevent any employee from having such interests. It merely requires that they disclose such interests. It does not apply to consultants.

Currently, EPA and other Federal agencies require their employees who are at the GS–13 level or above and in a decision-making position to file financial interest statements which are not available to the public. This requirement is not based on any statutory provision but on a 1965 Executive Order No. 11222 and Civil Service Commission regulations. But the Executive Order and regulations are not backed by any statutory provisions prescribing penalties for violations.

The provision makes it clear that the Administrator of EPA must periodically look at the positions to determine who should file and not base his decision simply on the grade level of the employee. It also mandates annual filing by the affected employee and review by the

agency and provides criminal penalties for knowing violation. Adequate provision is made for the Administrator to define what a "known financial interest" is. Indeed, as an example of such a definition, the Department of the Interior published proposed regulations defining this term on March 22, 1976, for the purposes of Public Law 94–163. That definition, which is not yet finalized, of course, is as follows:

> Any pecuniary interest of which an officer or employee is cognizant or of which he can reasonably be expected to have knowledge. This includes pecuniary interest in any person engaged in the business of exploring, developing, producing, refining, transporting by pipeline or distributing (other than at the retail level) coal, natural gas, or petroleum products, or in property from which coal, natural gas, or crude oil is commercially produced. This further includes the right to occupy or use the aforesaid business or property, or to take any benefits therefrom based upon a lease or rental agreement, or upon any formal or informal contract with a person who has such an interest where the business arrangement from which the benefit is derived or expected to be derived has been entered into between the parties or their agents. With respect to officers or employees who are beneficiaries of "blind trusts," the disclosure is required only of interests that are initially committed to the blind trust, not of interests thereafter acquired of which the employee or officer has no actual knowledge.

Finally, the regulations would be expected to make it clear that public disclosure of financial statements shall be only for lawful purposes. A violation of this requirement is subject to criminal prosecution.

PORTIONS OF THE SOLID WASTE DISPOSAL ACT UNCHANGED BY THE BILL

While H.R. 14965 makes major amendments to the Solid Waste Disposal Act, substantial portions of the Act are unchanged. The following list gives the unchanged sections of the Act:

Section 201: Short Title.

Section 202: Findings and Purposes.

Section 203: Definitions. The existing definitions are unchanged although two new ones are added by the bill.

Section 204: Research, Demonstrations, Training, and Other Activities. The bill does not change the existing authority in the Act to conduct, and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, and individuals in the conduct of, and promote the coordination of, research investigations, experiments, training, demonstrations, and surveys. The bill merely adds new areas in which these activities are to be conducted.

Section 205: Special Study and Demonstration Projects on Recovery of Useful Energy and Materials. Provides for seven areas of investigation and an annual report.

Section 206; Interstate and Interlocal Cooperation. Provides for encouragement of cooperative activities.

Section 207; Grants for State, Interstate, and Local Planning. Grants for the development of plans for solid waste disposal.

Section 208; Grants for Resource Recovery Systems and Improved Solid Waste Disposal Facilities. Authority to make grants to any State, municipal, or interstate or intermunicipal agency for the demonstration of resource recovery systems or the construction of new or improved solid waste disposal facilities.

Section 209; Recommended Guidelines. Provides for the development of guidelines for environmentally sound solid waste disposal.

Section 210; Grants or Contracts for Training Projects. Provides for grants to any eligible training organization for training in solid waste disposal techniques.

Section 211; Applicability of Solid Waste Disposal Guidelines to Executive Agencies. Executive agencies shall comply with the guidelines developed under section 209.

Section 212; National Disposal Sites Study. Provides for a study and report on the creation of a system of national disposal sites for the storage and disposal of hazardous wastes.

Section 213; Labor Standards. Provides that no grants for construction shall be made unless all laborers will be paid at rates not less than the prevailing wages.

Section 214; Other Authority not Affected. The act does not supercede or limit other authorities, etc.

Section 215; General Provisions. Provides for grant payment schedules. Prohibits grants to private profitmaking organizations.

---

3. Legislative History

The first significant Federal effort in solid waste management and resource recovery was initiated in 1965 with the passage of the Solid Waste Disposal Act (P.L. 89–272). It called for a research and development program and provided funds to the States for making surveys of waste disposal practices and for developing waste disposal plans. The Resource Recovery Act of 1970 (P.L. 91–512) broadened the R&D approach to include major demonstrations and shifted the emphasis from disposal to recovery of materials and energy from solid wastes. It also required several studies and directed the Environmental Protection Agency (EPA) to issue guidelines on waste management and recovery which are mandatory on Federal agencies, but merely advisory to others.

In April 1975, the Committee on Interstate and Foreign Commerce held hearings on solid waste legislation at which witnesses endorsed comprehensive legislation establishing State solid waste management programs, eliminating freight rate discrimination, reducing the volume of wastes before they enter the solid waste stream, controlling hazardous wastes, and continuing technical assistance and research

and development. The need for private sector involvement in the resource recovery efforts of communities was emphasized, and tax incentives of various types were called for to stimulate recovery and reuse.

Environmental research and development being under the jurisdiction of the Committee on Science and Technology, the Subcommittee on the Environment and the Atmosphere held hearings in April 1976 on the Solid Waste Energy and Resource Recovery Act, H.R. 12380. Testimony ranged broadly over the subject of solid waste management and resource recovery.

Testimony at the hearings recorded the need for "low technologies" such as source separation, in addition to the high-cost "high technology" factories which would separate mixed municipal waste into its constituents. There was testimony on the need for additional large-scale multi-million dollar demonstration projects as well as testimony calling for the perfection of individual components of such systems.

There was testimony both for and against infusions of capital for construction from the Federal government. On the one hand, the lack of financing has held back cities that wish to construct facilities; on the other, there was evidence that the capital market is performing its proper role in evaluating risk factors, and the reluctance of financiers merely reflects the inadequacies of the technologies presently available. Methods of dealing with risk and overcoming the distortions in the economy were discussed.

Another concern expressed was that investments in large scale, capital-intensive resource-recovery plants would discourage the implementation of waste reduction technology. Because of the need to guarantee their ability to supply markets for recovered materials and thus their need for a steady input of recoverable waste, investors in large resource recovery systems would have no incentive to support waste reduction technologies.

Many witnesses began their testimony by reviewing the benefits and potential of resource recovery, and discussing its current status.

Briefly stated, the several methods for energy recovery that have been tried or are still being tested—waterwall incineration, refuse-derived fuel for use as a supplement to conventional fuels, and pyrolysis—have all encountered problems. There are also other waste-to-energy technologies whose developmental status ranges from purely theoretical to at least bench scale. But there was a preference for holding back and solidifying the progress made so far by perfecting components that have not performed as consistently or efficiently as designed. The same is largely true for materials separation processes, as well.

An area where there was a variety of opinion was on the role of demonstration projects, and this seemed partly due to the imprecision of the term. "Demonstration" generally refers to a full-scale or commercial-size facility or program; in many cases the demonstration will have been preceded by a small-scale "pilot project" or "pilot plant." It also carries the implication of a risk greater than the "normal" risk for any new business endeavor, and, indeed, this provides the rationale for governmental assistance.

4. Committee Actions

The Subcommittee on the Environment and the Atmosphere met on July 22 and July 29, 1976 to mark up a draft bill. The draft had been prepared in close cooperation with the Committee on Interstate and Foreign Commerce, which Committee has jurisdiction over regulatory aspects of solid waste management.

On July 29, the amended draft was ordered to be introduced as a clean bill and reported to the full Committee.

The Committee on Science and Technology met on August 10, 1976 to mark up the clean bill, H.R. 14965. Several perfecting amendments were offered by the Subcommittee chairman and adopted by voice vote.

The amendments are:

1. On page 6, amend lines 8 and 9 to read:

> (2) Any energy-related research, development, or demonstration project for the conversion, including bioconversion, of

The purpose of this amendment is simply to clarify awkward language.

2. On page 6, line 16, strike:

> and in accordance with modifications in such agreement which are mutually agreed upon by such Agency and Administration,

Paragraph 204(b)(2), from which this clause is struck, provides that EPA and ERDA shall coordinate their solid waste R. D. and D. activities according to an interagency agreement signed on May 7, 1976. In other words that agreement is incorporated into the law by reference. The purpose of this amendment is to prevent future changes in the May 7, 1976 interagency agreement between EPA and ERDA from having the force of law.

3. On page 7, line 9 amend "Section 204A" to read "sections 204A and 204B". The amendment provides that EPA and ERDA coordinate their activities under section 204B (technical information) as well as under section 204A (special studies).

4. On page 10, line 14, strike all through the period on line 2, page 11, and insert in lieu thereof the following:

> (f) The Administrator shall conduct a detailed and comprehensive study on the adverse effects of solid wastes from active and abandoned surface and underground mines on the environment, including, but not limited to the effects of such wastes on water, air, humans, health, welfare, and natural resources, and on the adequacy of means and measures currently employed by the mining industry, Government agencies, and others to dispose of and utilize such solid wastes and to prevent or substantially mitigate such adverse effects. In furtherance of this study, the Administrator shall, as he deems appropriate, review studies and other actions of other Federal agencies concerning such wastes with a view toward avoiding duplication of effort and the need to expedite such

study. The Administrator shall publish a report of such study and shall include appropriate findings and recommendations for Federal and non-Federal actions concerning such effects."

The language of subsection (f) which was struck, provided for a study of solid waste resulting from mining. The result of the amendment is to change the focus or emphasis of the study from a study of present practices and the costs of alternative practices for disposal of solid waste from mines to a study on the adverse effects of solid waste from mines and ways to mitigate these effects. In other words the thrust of the study is somewhat changed.

5. On page 12, line 22, after "(e)," insert "(f),"

6. On page 12, line 25, delete "(f),".

The effect of these two amendments is to require that the mining waste study be completed in one year rather than two.

A quorum being present the bill, H.R. 14965, as amended, was ordered to be reported by a unanimous voice vote.

---

5. Committee Recommendations

A quorum being present, the Committee favorably reported the bill, H.R. 14965, with amendments, and recommends its enactment.

---

6. Committee Views

COORDINATION BETWEEN EPA AND ERDA

Paragraph 204(b)(2) as amended, makes specific provision for the coordination of the Environmental Protection Agency and the Energy Research and Development Administration in the activities under the bill. The paragraph specifies that any energy-related research, development or demonstration projects for the conversion, including bioconversion, of energy from solid waste will be administered in accordance with the current interagency agreement between ERDA and EPA, which specifies the respective responsibilities of the two agencies in such projects. Additionally, the subsection specifies that EPA will conduct the special studies activities and information coordination, collection, and dissemination activities required by new sections 204A and 204B, respectively, in coordination and consultation with the ERDA.

The Committee has adopted the coordination provision in 204(b)(2) in an attempt to establish a scheme for delineation of responsibility between EPA and ERDA in the critical area of energy conversion from solid waste. The Chairman of the Subcommittee on Environment and the Atmosphere and the Subcommittee on Energy Research, Development and Demonstration of this Committee have agreed to this delineation of responsibility between EPA and ERDA. The lan-

guage in this bill is based on and incorporates by reference the May 7, 1976 Interagency Agreement between the Environmental Protection Agency and the Energy Research and Development Administration in the Development of Energy from Solid Wastes. The bill, thereby, would effectively codify the agreement between the agencies for the activities contained in them. The bill also would codify the agreement among the Congressional committees with legislative and oversight responsibility for solid waste technology and development.

The Committee has become convinced over the two sessions of this Congress of the absolute necessity for close cooperation and coordination between EPA and ERDA in this vital R&D effort. Both agencies have legitimate responsibilities in solid waste R&D which have been mandated by various Congressional actions. At the same time, each agency has its own specific responsibilities in such R&D. Neither agency, however, can proceed effectively on a wholly independent and uncoordinated effort. EPA and ERDA simply must work together to provide the Nation with a timely and broadly considered technical alternative for environmentally acceptable solid waste disposal that, to the extent feasible, incorporates energy and material recovery. The Interagency Agreement represents a significant first step towards that end, and the Committee commends the two agencies for this important joint initiative. Paragraph 204(b)(2) of the bill will provide the statutory mandate and mechanism for this required coordination, consultation and delineation of responsibility for these solid waste R&D activities.

Incidentally, the two Committees of the Senate (Public Works and Interior and Insular Affairs), having authorization responsibility for solid waste projects and the respective roles of EPA and ERDA, have reached an agreement on these roles similar to that is which is embodied in this bill. Further, they have adopted language almost identical to 204(b)(2) of the bill in a Senate-passed bill authorizing loan guarantees for commercial demonstration facilities for the production of synthetic fuels (S. 3105).

This Committee has included provisions specifying coordination between EPA and ERDA in a number of R&D areas in several bills in this Congress. Paragraph 204(b)(2) of the bill is the most explicit mandate of coordination thus far included in a bill by the Committee. This explicitness is a direct reflection of the increasing importance which the Committee attaches to this coordination and cooperation in addressing our Nation's related energy and environmental needs. The Committee expects both agencies to implement these provisions in the good faith spirit in which they have been legislated. While the Committee is greatly encouraged by the important joint initiative represented by their Interagency Agreement and applauds that initiative, the Committee anticipates a good faith implementation of paragraph 204(b)(2) and a resulting close coordination and cooperation between the two agencies. The two agencies should be on notice that this Committee intends to closely oversee this aspect of the H.R. 14965 program.

TECHNICAL INFORMATION

Concerning the information program provided for in section 204B of the bill the Committee feels strongly that EPA should analyze and publish reports on all demonstration projects, not just the successful ones. In any experimental program there will be some failures. In many cases the failures provide valuable lessons—these lessons should be made available to all potentially interested persons. The intent is not to encourage recrimination, but to avoid making the same mistake again and again.

Further, the Committee feels that EPA should develop a capability for monitoring and evaluating demonstration projects. This monitoring and evaluation capacity should be closely coordinated with those actually carrying out the day-to-day operation and maintenance of the demonstration facility. This may involve separate organizational entities, but in any case the organization should be alert to the necessity for an unbiased evaluative effort. In addition it is recommended that this evaluating function seek input from the regulatory and implementation side of the agency, and from outside experts. The Administrator should consider whether this function should be a part of the information program provided for in section 204B.

BUREAU OF MINES

In many of the research, development, and demonstration areas covered in this bill, the Bureau of Mines in the Department of Interior has great competence and experience. The Committee feels that the Administrator should seek consultation with the Director of the Bureau of Mines in planning the EPA program and, where appropriate, should utilize the expertise of that agency in carrying out the program. The Committee hopes that a continuing cooperative arrangement (as opposed to a series of episodic task-projects) can be developed between the two agencies.

NEED FOR CONTINUED RESEARCH, DEVELOPMENT AND DEMONSTRATION ON WASTE MANAGEMENT

The committee comments on this bill have focused on the resource recovery aspects of solid waste management. This is not meant to deemphasize the needed research, development, and demonstration for conventional solid waste management and for hazardous waste management. Generally, there are no market incentives for the private sector to invest in ways to control the environmental damages from improper waste management and disposal. The establishment of regulatory programs and the implementation of those programs will tend to stimulate investments by the private sector. Clearly, until that time comes, a large burden for this kind of research, development, and demonstration falls on the Federal government.

Particular areas of emphasis in conventional or hazardous solid waste management are: 1) ways to collect leachate, 2) ways to treat

leachate, 3) ways to incinerate and destroy organic hazardous wastes, 4) other biological and chemical treatment options for potentially hazardous wastes, 5) ways to evaluate disposal sites, and 6) ways to correct damages at disposal sites.

---

7. Oversight Activities

Pursuant to clause 2(1)(3)(A) of rule XI, and under the authority of rule X, clause 2(b)(1) and clause (3)(f), of the Rules of the House of Representatives the following statement on oversight activities is made:

The April hearings of the Subcommittee on the Environment and the Atmosphere were focused on a bill, H.R. 12380*, and so were primarily legislative in nature. However, as the bill was an amendment to existing legislation, and therefore there was testimony on the Federal programs under the existing legislation, the hearings also involved oversight of Federal programs. A general review of these hearings is presented above under "Legislative History." The following paragraphs give the major oversight conclusions to be drawn from the hearings:

1. There is a need for more research and development. The state of the art can be greatly improved. This is not directly critical of current efforts in the field, rather it implies that more effort is needed.

2. The testimony regarding the need for more demonstrations was divided. The consensus seems to be that there is no need for a massive demonstration program. On the other hand some technologies are ready to be demonstrated, and should be. There was concern that expensive demonstrations not take all funds away from research and development.

3. An R, D&D program should definitely include more work on small scale and low technology systems. Source separation should be a part of this effort.

4. A continuing problem with implementation of resource recovery systems is the lack of a reliable, profitable market for the recycled material.

The bill, H.R. 14965, was drafted in response to these and other findings.

---

8. Oversight Findings and Recommendations by the Committee on Government Operations

Pursuant to Rule X, clause 2(b)(2) of the Rules of the House of Representatives the following oversight findings and recommendations have been received: (Reprinted from Solid Waste—Materials

* That bill was superseded by H.R. 14965.

and Energy Recovery; Twenty Fifth Report by the Committee on Government Operations, June 30, 1976) :

III. FINDINGS OF FACT

1. Solid waste disposal is one of the most serious municipal problems; the problem is growing at an annual rate of nearly 8 percent.

2. Open dumps create health and environmental hazards.

3. Sanitary landfill disposal of municipal solid waste is the most commonly used disposal technique.

4. Sanitary landfill disposal is becoming increasingly unavailable as possible sites accessible to metropolitan areas become filled and costs of transportation mount.

5. Limitations on dumping municipal waste in the oceans, although environmentally desirable, exacerbate problems of municipal waste disposal.

6. Properly managed landfill disposal of refuse can be inexpensive and environmentally sound.

7. Technology whereby materials and energy are recovered from refuse is available.

8. Environmental, social, and economic benefits of resource recovery have been demonstrated in Europe and to a limited extent, in the United States.

9. A number of new, or heretofore undemonstrated, technologies are in various stages of development and demonstration in the United States.

10. The value of energy and materials that can be recovered through a resource recovery system and the fees paid for disposal of refuse at such facility (the "dump fee") may represent all, or a significant portion, of the cost of such facility.

11. Recovery of salable energy and materials, together with "dump fees", may make resource recovery facilities economically competitive with traditional systems.

12. Markets for recovered materials are very limited and unstable.

13. In many cases, energy expended in recovering materials is considerably less than the energy cost of extracting virgin materials.

14. Energy recovered from refuse may be in the form of steam, steam transformed into electricity, or any one of various types of solid, liquid or gaseous fuels ("refuse-derived fuels").

15. Refuse-derived energy in the form of steam, electricity, and refuse-derived fuel has been used successfully by industries and utilities.

16. In the initial full-scale operation of some resource recovery systems, problems have emerged such as: emissions of air-polluting gases and particulates, jamming and clogging of equipment, malfunctioning of equipment, and overheating.

17. The Federal program, which is largely based on the Resource Recovery Act of 1970, is essentially a non-regulatory program of EPA intended to provide technical assistance to communities and encourage the development of new technology through limited research, development, and demonstration.

18. Although existing and emerging technologies of resource recovery sometimes present attractive and financially competitive municipal waste disposal solutions, few communities are pursuing such resource recovery solutions.

19. Institutional barriers or obstacles much more than technological problems often thwart the development and realization of resource recovery solutions to municipal solid waste problems.

20. Municipal officials are often unaware of the availability of resource recovery systems and technologies, or lack the technical capacity to determine whether such systems or technologies are reliable, or whether they are appropriate to their particular needs.

21. Municipal officials often fail to take account of the full costs of their current waste disposal system, many of which costs are hidden or overlooked.

22. Many metropolitan areas composed of a number of political jurisdictions, often including a central city, group of independent surburban communities, and a surrounding county or township often have independent authorities over municipal solid waste collection and disposal.

23. The multiple jurisdictions within metropolitan areas often are unable to coordinate or unify their various solid waste collection or disposal systems because of obstacles which include: legal barriers, inconsistent disposal systems, inability to agree as to a single comprehensive system, inability to finance proportionate shares of a new system, and inability to provide a long-term commitment of minimum volumes of municipal refuse.

24. Most modern resource recovery systems require substantial capital investment and entail significant operation and maintenance costs.

25. Many municipalities lack the legal authority to issue revenue bonds for resource recovery.

26. Neither EPA nor any other Federal agency has authority to establish standards governing solid waste management or resource recovery.

27. The states of Wisconsin and Connecticut have established statewide programs which are premised on regional approaches, anticipate resource recovery opportunities, and require cooperation with private industry.

28. The ERDA has supported limited demonstration of new resource recovery technology.

29. Banks and leading institutions have financed municipal resource recovery systems and are willing to invest in such systems if such systems can be shown to be reliable and economically viable.

IV. RECOMMENDATIONS

1. Congress should consider legislation authorizing minimum national standards for the disposal of solid waste. Such standards should take account of the health hazards and environmental degradation associated with inadequately controlled land-fill disposal of refuse and to the maximum extent possible, take account of the environmental and economic costs and benefits of land-fill disposal and the availability and feasibility of alternative systems.

2. Congress should consider including in such legislation a requirement that open dumping of refuse be prohibited after a date certain. That date should allow communities a reasonable time within which to initiate systems which meet the national standards of municipal solid waste disposal.

3. Congress should consider including in such legislation direction that the Environmental Protection Agency, in consultation with the Energy Research and Development Administration, develop and issue such national standards of municipal solid waste disposal within one year from the date of enactment of such legislation.

4. Congress should consider including in such legislation provision for penalties against any community which fails to meet the national standards of municipal waste disposal or which permits open dumping after the date or dates specified in such standards and prohibition.

5. The Environmental Protection Agency should significantly expand the scope and quality of its technical assistance to states, regions, and municipalities to aid in the development of environmentally, technically, and economically sound solutions to municipal solid waste problems. Such assistance should be made, when appropriate, by interdisciplinary teams, which should include representatives of private industry and financial institutions, and other Federal agencies. These teams would be available upon request to states, regions, and municipalities.

6. The Environmental Protection Agency, in consultation with representatives of states, municipalities, private industry, and other Federal agencies, should develop recommended standards for state programs of solid waste management. Such recommended standards should include: regional approaches to solid waste management and resource recovery, techniques to overcome jurisdictional differences in metropolitan areas or regions (including the creation of regionwide solid waste management authorities pursuant to state law), comparison and analysis of alternate techniques of complying with the national standards of municipal solid waste

disposal; cooperation with industries and utilities; development and implementation of long-term agreements among regional solid waste managers, disposal and resource recovery facility owners, and managers and industrial and other buyers and users of recovered materials and energy; and techniques of financing region-wide solid waste disposal and resource recovery (including state authorization for the issuance of revenue bonds by regional solid waste authorities).

7. Congress should consider appropriating funds for limited Federal financial assistance to the states to assist them in the development of state-wide programs.

8. Congress should consider adopting legislation which directs that the resource recovery research and development efforts of the Environmental Protection Agency and the Energy Research and Development Administration be merged or very closely coordinated. Demonstration projects should [not] be supported by either agency unless both concur that adequate research and development has preceded such demonstration, that private industry would not otherwise develop and demonstrate such technology in a timely fashion, and that the technology to be demonstrated represents a significant new and beneficial potential.

9. The Congress should not authorize Federal financial assistance for the construction of resource recovery facilities or other municipal solid waste disposal facilities.

10. The Congress should not authorize Federal guarantees of municipal or state bonds intended to finance resource recovery or other municipal solid waste disposal systems.

* * * * *

Those recommendations of the Committee on Government Operations which fall within the jurisdiction of the Science and Technology Committee are addressed in H.R. 14965. Recommendation 5 calls for increased technical assistance to State and local agencies. The increased R, D&D program and the active technical information program address this item. Recommendation 8 calls for legislation directing close coordination between EPA and ERDA. Paragraph 204(b)(2) of the bill accomplishes this. Recommendation 8 also states that demonstrations should not be conducted unless (i) adequate research and development has preceded such demonstration, and (ii) that private industry would not otherwise develop and demonstrate such technology. Paragraph 204(b)(1) of the bill provides for appropriate research and development preceding demonstrations and section 204C of the bill provides that demonstrations can be assisted only if private industry will not conduct such demonstrations. Recommendations 9 and 10 state that Congress should not authorize financial assistance for municipal solid waste systems. Section 204C of the bill limits assistance to such systems to demonstrations of new technology, i.e. to bona fide innovative systems, precluding routine construction of such systems.

One further point should be made. Finding 7 states "Technology . . . is available." This could be taken to imply that no further research and development is needed. That this is not the implication of this finding was made clear in a letter from Chairman Ryan of the Government Operations Subcommittee on Conservation, Energy, and Natural Resources to the Chairman of the Environment and the Atmosphere Subcommittee. In his letter Chairman Ryan said, in part:

> We indicated in our report that "Technology whereby materials and energy are recovered from refuse is available." By no means, however, should this expression of the subcommittee be construed to imply that the nation has reached a complete commercialization stage, or that there is no major need for additional research, development and demonstration of resource recovery technology at the federal level. The need for a continuing and concerted RD&D program was stressed by several expert witnesses appearing before our subcommittee last March.
>
> We believe that there are a number of technologies which have been found to have great potential for energy recovery, but are in need of additional technical development.

---

9. Cost and Budget Data

In accordance with the requirements of section 252(b) of the Legislative Reorganization Act of 1970, the following estimate of obligations over the next five years is made:

[In millions of dollars]

	Fiscal year—				
	1978	1979	1980	1981	1982
General R., D. & D. and information	35	40	45	50	50
Special studies	8	2			
Total	43	42	45	50	50

---

10. Congressional Budget Act Information

Pursuant to section 308(a) of the Congressional Budget Act of 1974 the following statement is made: As this bill provides neither budget authority (appropriations) nor tax expenditures, section 308(a) does not apply.

11. Estimate and Comparison, Congressional Budget Office

Congress of the United States,
Congressional Budget Office,
Washington, D.C., August 25, 1976.

Hon. Olin E. Teague,
Chairman, Committee on Science and Technology,
U.S. House of Representatives,
Washington, D.C.

Dear Mr. Chairman: Pursuant to Section 403 of the Congressional Budget Act of 1974, the Congressional Budget Office has prepared the attached cost estimate for H.R. 14965, a bill to amend the Solid Waste Disposal Act to provide certain authorities respecting research, development, and demonstration.

Should the Committee so desire, we would be pleased to provide further details on the attached cost estimate.

Sincerely,

Alice M. Rivlin,
Director.

CONGRESSIONAL BUDGET OFFICE COST ESTIMATE

August 25, 1976.

1. Bill number: H.R. 14965.
2. Bill title: To amend the Solid Waste Disposal Act to provide certain authorities respecting research, development, and demonstration.
3. Purpose of bill: This legislation expands and clarifies some of the research and information gathering and disseminating activities of EPA as provided in the Solid Waste Disposal Act (P.L. 89–272). Specifically, the bill authorizes studies and full-scale demonstration projects to be undertaken by EPA.
4. Cost estimate: (millions of dollars):

Budget function 300:	
Authorization level:	
Fiscal year 1978	45.00
Fiscal year 1979	-----
Fiscal year 1980	-----
Fiscal year 1981	-----
Fiscal year 1982	-----
Cost:	
Fiscal year 1978	18.65
Fiscal year 1979	10.65
Fiscal year 1980	8.95
Fiscal year 1981	6.75
Fiscal year 1982	-----

5. Basis for estimate: The authorization amounts are specified in the bill. The legislation authorizes (Section 216(b)) $10 million for a number of specific studies, some of which are to be completed by 1 October 1978 (one-year studies) and others by 1 October 1979 (two-year studies). The one-year studies are assumed to spend entirely in FY 1978, while the two-year studies are assumed to spend equally in FY 1978 and FY 1979. Likely costs for these studies were determined after consultation with EPA, Office of Technology Assessment (OTA), and House Committee on Science and Technology staff. The $10 million is assumed to spend 85 percent in FY 1978 and 15 percent in FY 1979.

The legislation also authorizes (Section 216(a)) $35 million for certain information gathering and disseminating activities and for full-scale demonstration projects and related activities. The total $35 million is assumed to spend 41 percent in FY 1978, 24 percent in FY 1979, 20 percent in FY 1980, and 15 percent in FY 1981, although the spendout for individual items may differ from this rate. The spendout rate for the information gathering activities was determined after discussion with EPA, OTA, and House Committee on Science and Technology staff. In order to determine the spendout rate for the demonstration projects, a likely mix of new solid waste management projects was assumed and the spendout rate for these items estimated. Although the legislation clearly encourages cost sharing, it is conservatively assumed in this estimate that the projects are entirely federally funded.

6. Estimate comparison: None.

7. Previous CBO estimate: None.

8. Estimate prepared by: Terry Nelson (225–5275)

9. Estimate approved by: R. Scheppach for James L. Blum, Assistant Director for Budget Analysis.

---

12. Effect of Legislation on Inflation

In accordance with Rule XI, Clause 2(1)(4) of the Rules of the House of Representatives the following statement is made. This bill is assessed to have negligible direct inflationary effect on prices and costs in the national economy. Insofar as the programs authorized herein are successful, the following beneficial economic effects can be expected: Costs of municipal waste disposal will be reduced. Costs of environmental pollution control will be mitigated. Use of virgin resources will be reduced. Imports of certain materials will be reduced.

13. Sectional Analysis of the Bill

Section 1: The title of the bill is the "Solid Waste Research and Development Act of 1976."

Section 2: Findings:

(1) Our Nation's economic and population growth have resulted in an increase in waste materials.

(2) Concentration of our population in urban areas has created serious problems in the disposal of solid wastes.

(3) At the present rate of growth, many cities soon will be running out of suitable solid waste disposal sites.

(4) Improper methods of disposal results in serious hazards to the public health and interfere with community life and development.

(5) Efforts to control air and water pollution increase solid waste.

(6) Recycling and reuse of solid waste can conserve our limited resources.

(7) Energy can be produced from solid waste by methods currently being developed.

(8) Present efforts at resource recovery are scattered, with the major burden for development of resource recovery systems falling on local governments.

(9) A Federal information program is needed to develop and make available information on resource recovery.

(10) A Federal program of research, development, and demonstration is needed to help local agencies carry out their responsibilities.

Section 3. Definitions:

Defines "demonstration" to limiting efforts to the initial exhibition of a new technology.

Defines "sludge" broadly; includes sewage sludge, scrubber sludge, etc.

Subsection 4(a). Amends section 204(a) of the Solid Waste Disposal Act (which contains the general R, D & D authority in that act) to add items emphasizing research on:

(6) small scale and low technology systems;

(7) improving the utility and marketability of recovered resources;

(8) improving all aspects of landfill operations to reduce the adverse environmental effects of solid waste disposal on land;

(9) improving sludge management and recovery of resources from sludge;

(10) improving hazardous waste management; and

(11) adverse effects on air quality which result from burning solid waste for disposal or energy recovery.

Subsection 4(b). Amends section 204(b) of the Solid Waste Disposal Act as follows:

(1) Provides for a management system to insure the coordination of all R, D & D activities and to expedite the development and demonstration of promising research ideas.

(2) Provides for coordination of EPA and ERDA activities in accordance with the existing interagency agreement.

(A) energy-related projects of mutual interest will be planned jointly by EPA and ERDA;

(B) recognize the role of ERDA in energy-related projects;

(C) EPA shall retain responsibility for environmental, economic, and institutional aspects and for assurance that such projects are consistent with guidelines and applicable State plans; and

(D) provides that special studies and information activities relating to energy shall be coordinated with ERDA.

Subsection 4(c). Amends section 204(c) of the Solid Waste Disposal Act as follows:

(1) authorizes EPA to make grants or enter into contracts;

(2) contracts shall be made in accordance with 10 U.S.C. 2353; (DOD Act)

(3) patents covered by same provisions as ERDA's (Federal Nonnuclear Energy Research and Development Act of 1974, P.L. 93–577).

Section 5. Amends the Solid Waste Disposal Act by inserting new sections after section 204 as follows:

SPECIAL STUDIES PLANS FOR RESEARCH, DEVELOPMENT, AND DEMONSTRATION

SEC. 204A. (a) Study and publish a report on glass and plastic recovery.

(b) Study and publish a report on composition of the waste stream and potential utility of components.

(c) For the purpose of setting research priorities on the techniques of energy recovery from solid waste, EPA shall study and publish a report on such techniques.

(d) Study and publish a report on small-scale and low technology systems including their application to high density housing and office complexes.

(e) Study and publish a report on compatibility of source separation with high technology resource recovery systems.

(f) Study and publish a report on adverse effects of solid waste resulting from mining.

(g) Study and publish a report on sludge; types, sources, methods of disposal, and effects of sludge; methods to recover resources from sludge.

(h) Study and publish a report on discarded tires including problems involved in collection and recovery of resources from tires.

(i) Conduct research and report on the economics of, and impediments to, resource recovery facilities.

(j) Study and publish a report on all aspects of voluntary waste reduction systems including the degree to which such waste reduction systems could result in energy conservation.

(k) Study and publish a report on systems to alleviate hazards to aviation from birds feeding on landfills around airports.

(l) Requirement to complete the research and studies and submit the reports (b), (c), (d), (e), (g), and (k) no later than October 1, 1978. Studies (a), (f), (h), (i), and (j) by October 1, 1979. Results of these studies to be used for research planning.

COORDINATION, COLLECTION, AND DISSEMINATION OF INFORMATION

SEC. 204B. (a) Collect and coordinate information on—

(1) methods and costs of collection of solid waste;

(2) management practices, including data on different management methods;

(3) amount of recoverable resources in solid waste;

(4) methods of waste reduction available;

(5) energy recovery technologies;

(6) disposition of hazardous wastes;

(7) methods of financing solid waste facilities including resource recovery facilities;

(8) market availability for recovered resources;

(9) research projects.

(b) (1) Establish a Central Reference Library containing materials collected under subsection (a) and performance information on:

(i) various methods of resource recovery;

(ii) various systems and technologies for final disposition of solid waste, and;

(iii) other aspects of solid waste management.

Such library shall contain model codes, model accounting systems, and other information collected by EPA officials which may be of value to Federal, State, and local authorities.

(2) Information in the library shall be analyzed, published and made available to State and local governments.

(c) Provides for the development of model accounting system for use by State and local governments.

(d) Provides for the development of model codes applicable to State and local governments.

(e) Provides for the collection and publication of information concerning the activities of EPA with respect to resource conservation and recovery facilities.

FULL-SCALE DEMONSTRATION FACILITIES

SEC. 204C. (a) The Administrator may enter into contracts for a full-scale demonstration facility only if—

(1) the facility demonstrates a new, unproven, or significantly improved technology;

(2) the requirements of section 204 of this Act are met;

(3) the facility complies with pertinent environmental regulations;

(4) the facility is unlikely to be constructed without EPA assistance;

(5) Federal involvement can be terminated without compromising the objectives of this Act.

(b) No financial assistance may be given for a full-scale demonstration facility after ten years after enactment.

(c) (1) EPA shall make arrangements for maximum cost-sharing with Federal, State and local agencies, private persons, or combination thereof.

(2) Where practicable EPA shall provide monitoring of facilities for the purpose of obtaining information on the operation of such facilities.

(d) EPA shall not construct or operate any full-scale facilities, except by contract.

INTRA-AGENCY COORDINATING COMMITTEE

SEC. 204D. (a) Provides for an Intra-Agency Coordinating Committee to ensure that research goals are coordinated with the regulatory policies of the EPA.

(b) The Intra-Agency Coordinating Committee shall consist of nine members. The Administrator shall act as Chairman, eight members shall be selected from officials responsible for the conduct of research and development and solid waste regulatory programs of the EPA.

(c) (1) The Committee shall stimulate communication of information between personnel in various parts of the Agency and shall recommend research goals. The Committee shall not oversee execution of research.

(2) The Committee shall participate in budget formulation for research.

(3) The Committee shall consider reports of special studies, research and demonstrations in developing research plans.

(4) The Committee shall incorporate into its research plans any other significant information recommending research programs.

(5) The Committee shall meet at least

(A) annually at budget time;

(B) annually to review research goals.

(6) The Committee shall make an annual report to the President and to Congress.

(d) The Committee is authorized to consult other agencies in formulating proposals for research.

SEC. 6. Section 216 of the Solid Waste Disposal Act (42 U.S.C. 3259) is amended to read as follows:

AUTHORIZATION OF APPROPRIATIONS

SEC. 216. (a) Appropriations are authorized not to exceed $35,000,000 for fiscal year 1978, for sections 204, 204B, 204C, 204D, and 205 of this Act.

(b) Appropriations authorized not to exceed $10,000,000 for fiscal year 1978 and 1979, for section 204A of this Act.

SEC. 7. The Solid Waste Disposal Act (42 U.S.C. 3251) amended by adding a new section:

SUNSHINE REGULATIONS

SEC. 217 (a) Each officer or employee of the EPA who—

(1) performs any service under this Act; and

(2) has any known financial interest under this Act

shall file a statement of financial disclosure annually. Such statement shall be available to the public.

(b) (A) The Administrator shall define the term "known financial interest"; and

(B) The Administrator shall establish methods to monitor the filing and review of these financial statements;

(c) The Administrator shall identify positions to be exempted from financial disclosure.

(d) Defines the penalty to be imposed.

14. CHANGES IN EXISTING LAW MADE BY THE BILL, AS REPORTED

In compliance with clause 3 of rule XIII of the Rules of the House of Representatives, changes in existing law made by the bill, as reported, are as follows (existing law proposed to be omitted is enclosed in black brackets, new matter is printed in italic, existing law in which no change is proposed is shown in roman, and large unchanged blocks of existing law are indicated by * * *) :

SOLID WASTE DISPOSAL ACT

[PUBLIC LAW 89-272—89TH CONGRESS, S. 306, APPROVED OCTOBER 20, 1965]

AN ACT To authorize a research and development program with respect to solid-waste disposal, and for other purposes.

* * * * * * *

TITLE II—SOLID WASTE DISPOSAL

SHORT TITLE

SEC. 201. This title (hereinafter referred to as "this Act") may be cited as the "Solid Waste Disposal Act".

* * * * * * *

DEFINITIONS

* * * * * * *

(10) The term "resource recovery system" means a solid waste management system which provides for collection, separation, recycling, and recovery of solid wastes, including disposal of nonrecoverable waste residues.

(11) The term "demonstration" means the initial exhibition of a new technology process or practice or a significantly new combination of use of technologies, processes or practices, subsequent to the development stage, for the purpose of proving technological feasibility and cost effectiveness.

(12) the term "sludge" means any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility or any other such waste having similar characteristics and effects.

RESEARCH, DEMONSTRATIONS, TRAINING, AND OTHER ACTIVITIES

SEC. 204. (a) The Secretary shall conduct, and encourage, cooperate with, and render financial and other assistance to appropriate public (whether Federal, State, interstate, or local) authorities, agencies, and institutions, private agencies and institutions, and individuals in the conduct of, and promote the coordination of, research, investigation, experiments, training, demonstrations, surveys, and studies relating to—

(1) any adverse health and welfare effects of the release into the environment of material present in solid waste, and methods to eliminate such effects;

(2) the operation and financing of solid waste disposal programs;

(3) the reduction of the amount of such waste and unsalvageable waste materials;

(4) the development and application of new and improved methods of collecting and disposing of solid waste and processing and recovering materials and energy from solid wastes; [and]

(5) the identification of solid waste components and potential materials and energy recoverable from such waste components[.] ;

(6) small scale and low technology solid waste management systems, including but not limited to, resource recovery source separation systems;

(7) methods to improve the performance characteristics of resources recovered from solid waste and the relationship of such performance characteristics to available and potentially available markets for such resources;

(8) improvements in land disposal practices for solid waste (including sludge) which may reduce the adverse environmental effects of such disposal and other aspects of solid waste disposal on land, including means for reducing the harmful environmental effects of earlier and existing landfills, means for restoring areas damaged by such earlier or existing landfills, means for rendering landfills safe for purposes of construction and other uses, and techniques of recovering materials and energy from landfills;

(9) methods for the sound disposal of, or recovery of resources, including energy, from sludge (including sludge from pollution control and treatment facilities, coal slurry pipelines, and other sources);

(10) methods of hazardous waste management, including methods of rendering such waste environmentally safe; and

(11) any adverse effects on air quality (particularly with regard to the emission of heavy metals) which result from solid waste which is burned (either alone or in conjunction with other substances) for purposes of disposal or energy recovery.

[(b) In carrying out the provisions of the preceeding subsection, the Secretary is authorized to—

(1) collect and make available, through publications and other appropriate means, the results of, and other information pertaining to, such research and other activities, including appropriate recommendations in connection therewith;

(2) cooperate with public and private agencies, institutions, and organizations, and with any industries involved, in the preparation and the conduct of such research and other activities; and

(3) make grants-in-aid to public or private agencies and institutions and to individuals for research, training projects, surveys, and demonstrations (including construction of facilities), and provide for the conduct of research, training, surveys, and demonstrations by contract with public or private agencies and institutions and with individuals; and such contracts for research or demonstrations or both (including contracts for construction) may be made in accordance with and subject to the limitations provided

with respect to research contracts of the military departments in title 10, United States Code, section 2353, except that the determination, approval, and certification required thereby shall be made by the Secretary.]

(b) (1) In carrying out his functions pursuant to this Act, and any other Federal legislation respecting solid waste or discarded material research, development, and demonstrations, the Administrator shall establish a management program or system to insure the coordination of all such activities and to facilitate and accelerate the process of development of sound new technology (or other discoveries) from the research phase, through development, and into the demonstration phase.

(2) Any energy-related research, development, or demonstration project for the conversion, including bioconversion, of solid waste carried out by the Environmental Protection Agency or by the Energy Research and Development Administration pursuant to this or any other Act shall be administered in accordance with the May 7, 1976, Interagency Agreement between the Environmental Protection Agency and the Energy Research and Development Administration on the Development of Energy from Solid Wastes and specifically, that in accordance with this agreement, (A) for those energy-related projects of mutual interest, planning will be conducted jointly by the Environmental Protection Agency and the Energy Research and Development Administration, following which project responsibility will be assigned to one agency; (B) energy-related portions of projects for recovery of synthetic fuels or other forms of energy from solid waste shall be the responsibilty of the Energy Research and Development Administration; (C) the Environmental Protection Agency shall retain responsibility for the environmental, economic, and institutional aspects of solid waste projects and for assurance that such projects are consistent with any applicable suggested guidelines published pursuant to section 209(a), and any applicable State or regional solid waste management plan; and (D) any activities undertaken under provisions of section 204A and 204B as related to energy; as related to energy or synthetic fuels recovery from waste; or as related to energy conservation shall be accomplished through coordination and consultation with the Energy Research and Development Administration.

[(c) Any grant, agreement, or contract made or entered into under this section shall contain provisions effective to insure that all information, uses, processes, patents and other developments resulting from any activity undertaken pursuant to such grant, agreement, or contract will be made readily available on fair and equitable terms to industries utilizing methods of solid-waste disposal and industries engaging in furnishing devices, facilities, equipment, and supplies to be used in connection with solid-waste disposal. In carrying out the provisions of this section, the Secretary and each department, agency, and officer of the Federal Government having functions or duties under this Act shall make use of and adhere to the Statement of Government Patent Policy which was promulgated by the President in his memorandum of October 10, 1963. (3 CFR, 1963 Supp., p. 238.)]

(c) (1) In carrying out subsection (a) of this section respecting solid waste research, studies, development, and demonstration, except

as otherwise specifically provided in section 204C(d), the Administrator may make grants to or enter into contracts (including contracts for construction) with, public agencies and authorities or private persons.

(2) Contracts for research, development, or demonstrations or for both (including contracts for construction) shall be made in accordance with and subject to the limitations provided with respect to research contracts of the military departments in title 10, United States Code, section 2353, except that the determination, approval, and certification required thereby shall be made by the Administrator.

(3) Any invention made or conceived in the course of, or under, any contract under this Act shall be subject to section 9 of the Federal Nonnuclear Energy Research and Development Act of 1974 to the same extent and in the same manner as inventions made or conceived in the course of contracts under such Act, except that in applying such section, the Environmental Protection Agency shall be substituted for the Energy Research and Development Administration and the words "solid waste" shall be substituted for the word "energy" where appropriate.

SPECIAL STUDIES; PLANS FOR RESEARCH, DEVELOPMENT, AND DEMONSTRATIONS

Sec. 204A. (a) The Administrator shall undertake a study and publish a report on resource recovery from glass and plastic waste, including the technological and economic problems associated with such recovery.

(b) The Administrator shall undertake a systematic study of the composition of the solid waste stream and of anticipated future changes in the composition of such stream and shall publish a report containing the results of such study and quantitatively evaluating the potential utility of such components.

(c) For purposes of determining priorities for research on recovery of materials and energy from solid waste and developing materials and energy recovery research, development, and demonstration strategies, the Administrator shall review, and make a study of, the various existing and promising techniques of energy recovery from solid waste (including, but not limited to, waterwall furnace incinerators, dry shredded fuel systems, pyrolysis, densified refuse-derived fuel systems, anerobic digestion, and fuel and feedstock preparation systems). In carrying out such study the Administrator shall investigate with respect to each such technique—

(1) the degree of public need for the potential results of such research, development, or demonstration,

(2) the potential for research, development, and demonstration without Federal action, including the degree of restraint on such potential posed by the risks involved, and

(3) the magnitude of effort and period of time necessary to develop the technology to the point where Federal assistance can be ended.

(*d*) *The Administrator shall undertake a comprehensive study and analysis of, and publish a report on, systems of small-scale and low technology solid waste management, including household resource recovery and resource recovery systems which have special application to multiple dwelling units and high density housing and office complexes. Such study and analysis shall include an investigation of the degree to which such systems could contribute to energy conservation.*

(*e*) *The Administrator shall undertake research and studies concerning the compatibility of front-end source separation systems with high technology resource recovery systems and shall publish a report containing the results of such research and studies.*

(*f*) *The Administrator shall conduct a detailed and comprehensive study on the adverse effects of solid wastes from active and abandoned surface and underground mines on the environment, including, but not limited to the effects of such wastes on water, air, humans, health, welfare, and natural resources, and on the adequacy of means and measures currrently employed by the mining industry, Government agencies, and others to dispose of and utilize such solid wastes and to prevent or substantially mitigate such adverse effects. In furtherance of this study, the Administrator shall, as he deems appropriate, review studies and other actions of other Federal agencies concerning such wastes with a view toward avoiding duplication of effort and the need to expedite such study. The Administrator shall publish a report of such study and shall include appropriate findings and recommendations for Federal and non-Federal actions concerning such effects.*

(*g*) *The Administrator shall undertake a comprehensive study and publish a report on sludge. Such study shall include an analysis of—*

(*1*) *what types of solid waste (including but not limited to sewage and pollution treatment residues and other residues from industrial operations such as extraction of oil from shale liquefaction and gasification of coal and coal slurry pipeline operations) should be classified as sludge;*

(*2*) *the effects of air and water pollution legislation on the creation of large volumes of sludge;*

(*3*) *the amounts of sludge originating in each State and in each industry producing sludge;*

(*4*) *methods of disposal of such sludge, including the cost, efficiency, and effectiveness of such methods;*

(*5*) *alternative methods for the use of sludge, including agricultural applications of sludge and energy recovery from sludge; and*

(*6*) *methods to reclaim areas which have been used for the disposal of sludge or which have been damaged by sludge.*

(*h*) *The Administrator shall undertake a study and publish a report respecting discarded motor vehicle tires which shall include an analysis of the problems involved in the collection, recovery of resources including energy, and use of such tires.*

(*i*) *The Administrator shall conduct research and report on the economics of, and impediments to, the effective functioning of resource recovery facilities.*

(j) The Administrator shall undertake a comprehensive study and analysis of and publish a report on the environmental, social, and economic effects, cost-effectiveness, and efficiency of waste reduction systems or proposals which may, or could be, voluntarily implemented by Federal, State, and local authorities and the private sector. Such study and analysis shall include an investigation of the degree to which such waste reduction systems or proposals could result in energy conservation.

(k) The Administrator shall undertake a comprehensive study and analysis of, and publish a report on systems to alleviate the hazards to aviation from birds congregating and feeding on landfills in the vicinity of airports.

(l) The Administratotor shall complete the research and studies, and submit the reports, required under subsections (b), (c), (d), (e), (f), (g), and (k) not later than October 1, 1978. The Administrator shall complete the research and studies, and submit the reports, required under subsections (a), (h), (i), and (j) not later than October 1, 1979. Upon completion, each study specified in subsections (a) through (k) of this section, the Administrator shall prepare and submit to the intra-agency coordinating committee established under section 204D a plan for research, development, and demonstration respecting the findings of the study and shall submit any legislative recommendations resulting from such study to appropriate committees of Congress.

COORDINATION, COLLECTION, AND DISSEMINATION OF INFORMATION

Sec. 204B. (a) The Administrator shall collect and coordinate information on—

(1) methods and costs of the collection of solid waste;

(2) solid waste management practices, including data on the different management methods and the cost, operation, and maintenance of such methods;

(3) the amounts and percentages of resources (including energy) that can be recovered from solid waste by use of various discarded materials management practices and various technologies;

(4) methods available to reduce the amount of solid waste that is generated;

(5) existing and developing technologies for the recovery of energy or materials from solid waste and the costs, reliability, and risks associated with such technologies;

(6) hazardous solid waste, including incidents of damage resulting from the disposal of hazardous solid wastes; inherently and potentially hazardous solid wastes; methods of neutralizing or properly disposing of hazardous solid wastes; facilities that properly dispose of hazardous wastes;

(7) methods of financing resource recovery facilities or, sanitary landfills, or hazardous solid waste treatment facilities, whichever is appropriate for the entity developing such facility or landfill (taking into account the amount of solid waste reasonably expected to be available to such entity);

(8) the availability of markets for the purchase of resources, either materials or energy, recovered from solid waste; and

(9) research and development projects respecting solid waste management.

(b)(1) The Administrator shall establish and maintain a central reference library for (A) the materials collected pursuant to subsection (a) of this section and (B) the actual performance and cost effectiveness records and other data and information with respect to—

(i) the various methods of energy and resource recovery from solid waste,

(ii) the various systems and technologies for collection, transport, storage, treatment, and final disposition of solid waste, and

(iii) other aspects of solid waste and hazardous solid waste management.

Such central reference library shall also contain, but not be limited to, the model codes and model accounting systems developed under this section, the information collected under subsection (a), and, subject to any applicable requirements of confidentiality, information respecting any aspect of solid waste provided by officers and employees of the Environmental Protection Agency which has been acquired by them in the conduct of their functions under this Act and which may be of value to Federal, State, and local authorities and other persons.

(2) Information in the central reference library shall, to the extent practicable, be collated, analyzed, verified, and published and shall be made available to State and local governments and other persons at reasonable times and subject to such reasonable charges as may be necessary to defray expenses of making such information available. The Administrator shall also implement a program for the rapid dissemination of information relating to all aspects of solid waste and hazardous solid waste management, including the results of any research, development, demonstrations, investigations, experiments, surveys or studies relating to solid waste or hazardous solid wastes that are undertaken by the Administrator or by other Federal agencies.

(c) In order to assist State and local governments in determining the costs and revenues associated with the collection and disposal of solid waste and with resource recovery operations, the Administrator shall develop and publish a recommended model cost and revenue accounting system applicable to the solid waste management functions of State and local governments. Such system shall be in accordance with generally accepted accounting principles. The Administrator shall periodically, but not less frequently than once every five years, review such accounting system and revise it as necessary.

(d) The Administrator is authorized, in cooperation with appropriate State and local agencies, to recommend model codes, ordinances, and statutes, providing for sound solid waste management.

(e) The Administrator shall collect and make available (through public education programs, publications, or other appropriate means), information concerning the activities of the Environmental Protection Agency pertaining to research, development, feasibility, and operation of resource conservation and recovery facilities, and any other technical, managerial, financial, or market aspect of such facilities.

FULL-SCALE DEMONSTRATION FACILITIES

Sec. 204C. (a) The Administrator may enter into contracts with public agencies or authorities or private persons for the construction and operation of a full-scale demonstration facility under this Act, or provide financial assistance in the form of grants to a full-scale demonstration facility under this Act only if the Administrator finds that—

(1) such facility or proposed facility will demonstrate at full scale a new or significantly improved technology or process, a practical and significant improvement in discarded material management practice, or the technological feasibility and cost effectiveness of an existing, but unproven technology, process, or practice, and will not duplicate any other Federal, State, local, or commercial facility which has been constructed or with respect to which construction has begun (determined as of the date action is taken by the Administrator under this Act).

(2) such contract or assistance meets the requirements of section 204 and meets other applicable requirements of this Act,

(3) such facility will be able to comply with the guidelines published under section 209 and with other laws and regulations for the protection of health and the environment,

(4) in the case of a contract for construction or operation, such facility is not likely to be constructed or operated by State, local, or private persons or in the case of an application for financial assistance, such facility is not likely to receive adequate financial assistance from other sources, and

(5) any Federal interest in, or assistance to, such facility will be disposed of or terminated, with appropriate compensation, within such period of time as may be necessary to carry out the basic objectives of this Act.

(b) No obligation may be made by the Administrator for financial assistance under this Act for any full-scale demonstration facility after the date ten years after the enactment of this section. No expenditure of funds for any such full-scale demonstration facility under this Act may be made by the Administrator after the date fourteen years after such date of enactment.

(c)(1) Wherever practicable, in constructing, operating, or providing financial assistance under this Act to a full-scale demonstration facility, the Administrator shall endeavor to enter into agreements and make other arrangements for maximum practicable cost sharing with other Federal, State, and local agencies, private persons, or any combination thereof.

(2) The Administrator shall enter into arrangements, wherever practicable and desirable, to provide monitoring of full-scale solid waste facilities (whether or not constructed or operated under this Act) for purposes of obtaining information concerning the performance, and other aspects, of such facilities. Where the Administrator provides only monitoring and evaluation instruments or personnel (or both) or funds for such instruments or personnel and provides no other financial assistance to a facility, notwithstanding section 204(c)(3), title to any invention made or conceived of in the course of developing,

constructing, or operating such facility shall not be required to vest in the United States and patents respecting such invention shall not be required to be issued to the United States.

(d) After the date of enactment of this section, the Administrator shall not construct or operate any full-scale facility (except by contract with public agencies or authorities or private persons).

INTRA-AGENCY COORDINATING COMMITTEE

SEC. 204D. (a) The Administrator shall establish an Intra-Agency Coordinating Committee (hereinafter in this section referred to as the "Committee") to promote coordination of the research goals of the Environmental Protection Agency with the regulatory functions of the Agency respecting solid waste.

(b) The Committee shall be comprised of nine members including the Administrator who shall act as Chairman. Eight members shall be selected by the Administrator from among officials of the Environmental Protection Agency responsible for the conduct of research, development, and demonstration and from among officials of the Agency engaged in the regulatory and implementation programs of the Agency respecting solid waste. The United States Resource Recovery Corporation may designate a representative who shall be permitted to attend and observe meetings of the Committee.

(c) (1) The Committee (A) shall stimulate the flow of information from personnel engaged in the regulatory and implementation programs of the Agency to personnel engaged in the planning of research, development, and demonstration programs and in the establishment of research goals and (B) shall recommend and propose research goals and plans. The Committee shall not oversee the execution of research, development, and demonstration programs, but shall determine whether or not appropriate research goals are being set and met in a timely fashion.

(2) The Committee shall actively participate in the development of plans and budgets for research by the Agency prior to the annual submission of the Agency's budget to the Office of Management and Budget.

(3) Reports of the special studies, research, and demonstrations provided for in section 204, 204A, and 204C shall be provided to the Committee which shall incorporate them into research plans proposed by the Committee as may be appropriate. The Committee shall report on the actions, if any, taken by the Agency pursuant to such studies.

(4) The Committee shall also receive and incorporate into its research plans other significant studies, reports, and information recommending research programs respecting solid waste. When appropriate it shall report on the actions, if any, taken by the Agency pursuant to such studies, reports, and other information.

(5) The Committee shall meet as often as necessary, but not less than twice annually as follows:

(A) at least once annually, during the time when the Agency is formulating its annual budget submission for the coming fiscal year, and

(B) at least once annually, to recommend and propose research goals and plans and to review progress of the Environmental Protection Agency toward meeting research goals.

(6) The Committee shall report annually to the President and to Congress. Such report shall be included, as a separate part, in a comprehensive annual report submitted by the Administrator to the President and Congress. Dissenting Committee members may report in an independent part of such comprehensive report.

(d) The Committee is authorized and encouraged to seek the views of other agencies in formulating its recommendations and proposals for research.".

SPECIAL STUDY AND DEMONSTRATION PROJECTS ON RECOVERY OF USEFUL ENERGY AND MATERIALS

SEC. 205. (a) The Secretary shall carry out an investigation and study to determine—

(1) means of recovering materials and energy from solid waste, recommended uses of such materials and energy for national or international welfare, including identification of potential markets for such recovered resources, and the impact of distribution of such resources on existing markets;

(2) changes in current production characteristics and production and packaging practices which would reduce the amount of solid waste;

(3) methods of collection, separation, and containerization which will encourage efficient utilization of facilities and contribute to more effective programs of reduction, reuse, or disposal of wastes;

(4) the use of Federal procurement to develop market demand for recovered resources;

* * * * * * *

[APPROPRIATIONS

[SEC. 216. (a) (1) There are authorized to be appropriated to the Secretary of Health, Education, and Welfare for carrying out the provisions of this Act (including, but not limited to, section 208), not to exceed $41,500,000 for the fiscal year ending June 30, 1971.

[(2) There are authorized to be appropriated to the Administrator of the Environmental Protection Agency to carry out the provisions of this Act, other than section 208, not to exceed $72,000,000 for the fiscal year ending June 30, 1972, not to exceed $76,000,000 for the fiscal year ending June 30, 1973, and not to exceed $76,000,000 for the fiscal year ending June 30, 1974.

[(3) There are authorized to be appropriated to the Administrator of the Environmental Protection Agency to carry out section 208 of this Act not to exceed $80,000,000 for the fiscal year ending June 30, 1972, not to exceed $140,000,000 for the fiscal year ending June 30, 1973, not to exceed $76,000,000 for the fiscal year ending June 30, 1974, and not to exceed $76,000,000 for the fiscal year ending June 30, 1975.

[(b) There are authorized to be appropriated to the Secretary of the Interior to carry out this Act not to exceed $8,750,000 for the fiscal year ending June 30, 1971, not to exceed $20,000,000 for the fiscal year ending June 30, 1972, not to exceed $22,500,000 for the fiscal year ending June 30, 1973, and not to exceed $22,500,000 for the fiscal year ending June 30, 1974. Prior to expending any funds authorized to be appropriated by this subsection, the Secretary of the Interior shall consult with the Secretary of Health, Education, and Welfare to assure that the expenditure of such funds will be consistent with the purposes of this Act.

[(c) Such portion as the Secretary may determine, but not more than 1 per centum, of any appropriation for grants, contracts, or other payments under any provision of this Act for any fiscal year beginning after June 30, 1970, shall be available for evaluation (directly, or by grants or contracts) of any program authorized by this Act.

[(d) Sums appropriated under this section shall remain available until expended.]

"*AUTHORIZATION OF APPROPRIATIONS*

SEC. 216. (a) There are authorized to be appropriated not to exceed $35,000,000 for the fiscal year 1978 to carry out section 204, 204B, 204C, 204D, and 205 of this Act.

(b) There are authorized to be appropriated not to exceed $10,000,000 for the fiscal years 1978 and 1979 to carry out section 204A of this Act."

SUNSHINE REGULATIONS

SEC. 217. (a) Each officer or employee of the Administrator who—

(1) performs any function or duty under this Act; and

(2) has any known financial interest in any person who applies for or receives financial assistance under this Act

shall, beginning on February 1, 1977, annually file with the Administrator a written statement concerning all such interests held by such officer or employee during the preceding calendar year. Such statement shall be available to the public.

(b) The Administrator shall—

(1) act within ninety days after the date of enactment of this Act—

(A) to define the term 'known financial interest' for purposes of subsection (a) of this section; and

(B) to establish the methods by which the requirement to file written statements specified in subsection (a) of this section will be monitored and enforced, including appropriate provision for the filing by such officers and employees of such statements and the review by the Administrator of such statements; and

(2) report to the Congress on June 1, 1978, and of each succeeding calendar year with respect to such disclosures and the actions taken in regard thereto during the preceding calendar year.

(c) In the rules prescribed under subsection (b) of this section, the Administrator may identify specific positions within the Environmental Protection Agency which are of a nonpolicymaking nature and provide that officers or employees occuping such positions shall be exempt from the requirements of this section.

(d) Any officer or employee who is subject to, and knowingly violates, this section shall be fined not more than $2,500 or imprisoned not more than one year, or both.".

---

15. Department Recommendations

Department recommendations were solicited on August 3, 1976 from the Department of Interior, the General Accounting Office, the Bureau of Mines, the Federal Energy Administration, ERDA, and EPA. Only FEA has commented.

Federal Energy Administration,
Washington, D.C., August 18, 1976.

Hon. Olin E. Teague,
Chairman, Committee on Science and Technology,
House of Representatives,
Washington, D.C.

Dear Mr. Chairman: The Administrator has received your request for the views of the Federal Energy Administration (FEA) on H.R. 14965, a bill introduced by Mr. Brown of California on July 30, 1976, which has been cited as the "Solid Waste Research and Development Act of 1976".

Deputy Assistant Administrator John Freeman testified on the subject of solid waste management before the House Committee on Government Operations in March of this year. A copy of his testimony outlining FEA's views on the subject is attached for your information.

Sincerely,

Paul Cyr,
Director for Congressional Affairs.

Enclosure.

STATEMENT OF JOHN K. FREEMAN, DEPUTY ASSISTANT ADMINISTRATOR, ENERGY RESOURCE DEVELOPMENT, FEDERAL ENERGY ADMINISTRATION

Introduction

Mr. Chairman, I would like to thank you for the opportunity to testify today on solid waste management and resource recovery of materials and energy. While the recovery of materials is an important concern, I will address primarily the recovery of energy from municipal wastes. Enormous quantities of organic waste materials are generated each year in the United States. However, these wastes are expected to supply only a small, but locally significant, portion of our energy needs during the next decade.

Organic wastes are complex but may be grouped in seven categories: (1) municipal solid waste; (2) manure; (3) agricultural wastes; (4) logging and wood residues; (5) industrial wastes; (6) sewage sludge; and (7) miscellaneous wastes. Gross estimates indicate these wastes amount to more than 2 billion tons per year. Eighty percent of the total amount is in the initial three categories.

Municipal solid waste

Only about ten percent of the organic waste is considered accessible for recovery due to its physical dispersion. Municipal solid waste (MSW) is a notable exception. In addition to the relative concentration of MSW, it is a promising near-term resource because:

Much of the basic technology to obtain energy from wastes is available;

MSW collection systems exist in all major population centers;

MSW is a renewable resource;

In addition to yielding recyclable materials, MSW may provide energy;

Use of MSW as a source of recoverable energy and materials provides an environmentally desirable alternative to current waste disposal practices.

Processes which have a high potential for producing energy from MSW within the next decade include: 1) direct combustion wherein the organic materials are used alone or as a supplementary fuel; 2) pyrolysis to produce gases and oil; 3) gasification resulting in a low Btu gas of about 300 Btu per cubic foot; and 4) fermentation producing a gaseous fuel containing 500 to 700 Btu per cubic foot. Of these technologies, direct combustion is the least complex and has been demonstrated commercially in several locations. Moreover, a fledgling industry is growing to support the needs for urban waste combustion and recovery of useable materials such as metals and glass.

The Federal Energy Administration views MSW as a meaningful renewable source of energy. One ton of MSW has a heating value of about nine million Btu or 1.5 barrels of oil. MSW has a low sulfur content which enhances its value as a fuel.

The amount of MSW collected annually is the energy equivalent of 200 million barrels of oil or about one-third of our present Middle East oil imports. We estimate that without Federal involvement between now and 1985, there will be constructed in the U.S. energy and resource recovery facilities to use about 86,000 tons of MSW per day. This would make use of only about one-fifth of the waste collected.

In Europe, where the cost of landfill as well as energy has been significantly higher than in this country, energy recovery through direct combustion of MSW is a well-established practice. There are currently about 150 plants in operation in Europe that are recovering energy from waste. Some of these plants have been operating for over ten years.

In this country, little interest has been shown until recently in recovering energy from urban refuse. One important reason is that we have had abundant and relatively inexpensive energy supplies. Also, the cost of waste disposal has been cheap as well. Thus, it has not

been economically worthwhile to recover the energy in our solid waste streams. Additionally, there are institutional barriers which limit the acceptance of recovery systems.

However, with the rising cost of energy and landfill disposal, the economics of resource recovery are becoming more favorable. There is little doubt that in the future, resource recovery from MSW will be a part of every large city's waste disposal system. Since the cost of energy and waste disposal varies from region to region, energy and resource recovery will *not* become economically viable in all areas of the country at the same time.

Private industry is becoming active in recovering energy and useful materials from municipal solid waste. An example of this is at Saugus, Massachusetts, where a large refuse-to-energy plant has just begun operation. This project was the result of a cooperative effort by 16 communities and several industries. The plant has the potential of saving approximately 400,000 barrels of residual fuel oil a year. Other projects are underway by private industry which have the potential of aiding our effort to achieve energy independence.

FEA activities

Despite these efforts, the implementation of MSW energy and resource recovery projects is not proceeding as rapidly as we would like. The reasons for this are many and complex. One of the most critical impediments to implementation is in the catchall category of "institutional barriers."

Because of entrenched practices with regard to solid waste management, there are many institutional barriers that will delay the implementation of resource recovery beyond the time when it becomes economically viable. One of FEA's objectives is to identify those institutional barriers that prevent the greater use of MSW as an energy source.

The primary focus of our effort has been to try to understand the barriers preventing electric utilities from utilizing solid waste. Utilities are particularly attractive because of their proximity to population centers and their ability to use a vast quantity of solid waste. For example, in a relatively small boiler (100 megawatts), the Union Electric Company of St. Louis burns ten tons of solid waste along with 56 tons of coal per hour.

Preliminary results from an FEA study analyzing the institutional barriers indicate that one reason why utilities are unwilling to burn refuse as a fuel supplement is a reluctance to become directly involved in the refuse management problems of municipalities. Many utility officials feel this would be a diversion from their normal function of providing reliable, efficient power. Another apparent institutional barrier is uncertainty about how capital and operating costs associated with solid waste projects would be treated by regulatory commissions. Also, the capital and operating costs involved in burning MSW are not sufficiently defined; and regulatory uncertainties at the Federal and State level cause uncertainties in the economic feasibility of compliance with air and water emission standards.

In addition to the institutional barriers study, FEA is participating in a study with the Tennessee Valley Authority (TVA) and the Environmental Protection Agency (EPA) to examine the feasibility of establishing a regional resource recovery facility that would supply waste to one or more of TVA's boilers. Because TVA is the largest steam electric utility in the country in a region of relatively low fuel cost and low cost landfill, a successful demonstration of resource recovery would probably cause a large number of utilities to adopt the practice of utilizing solid waste as a supplemental fuel.

On a small scale, FEA is participating with the Department of Housing and Urban Development (HUD) in an examination of the feasibility of installing a heat recovery incinerator as part of HUD's Modular Integrated Utility System program. FEA will inform state and local governments about ways they may reduce these barriers to implementation of economically feasible energy recovery. The fact that it is becoming feasible is demonstrated by a number of resource recovery facilities that have not required any Federal assistance. Union Electric is planning to expand its demonstration project into a fully operational, privately funded 8,000 ton-a-day operation. The City of Milwaukee, Wisconsin has signed a contract with a private company to build a resource recovery plant. There are other examples that could be added, and the list is increasing.

FEA's solid waste efforts differ significantly from the programs of EPA, ERDA, and the Bureau of Mines in that we are not involved in developing new technologies and hardware and thus have no research and development program. Rather, the FEA effort centers on studying the institutional and financial barriers which are a significant handicap to the recovery of energy and resources.

Once the institutional barriers are delineated more fully, policies to encourage the overcoming of these barriers will be formulated. Thus we see as FEA's role in the solid waste area as one of expediting commercialization. The technology and hardware development problems are best left with other agencies. In this way, we feel FEA's effort will complement the efforts of other agencies in the solid waste area.

The Federal outlook

With America's energy demand increasing, municipal solid wastes are potentially a good source of energy in both the short or long terms due to existing collection systems, lack of alternative uses for MSW, the location of many landfills near large users of energy, and strong citizen opinions in favor of utilizing solid wastes. Implementing energy and resource recovery projects should be basically a State and local responsibility.

In conclusion, organic wastes can supply needed energy with currently available technology. An effective program to use MSW requires the active cooperation of State and local governments along with the participation of private industry. FEA will endeavor to inform State and local authorities about ways they may reduce the institutional barriers which limit the use of MSW and about ways they may encourage the implementation of economically feasible energy recovery.

16. ADDITIONAL VIEW OF HON. MIKE McCORMACK AND HON. BARRY M. GOLDWATER, JR.

This legislation represents a major milestone in the continuing Congressional efforts to forge an effective coordination of our Nation's energy and environmental R&D programs. As the Committee View in this report discusses, Paragraph 204(b)(2) of H.R. 14965 specifies a statutory mechanism for the coordination of the activities of the Energy Research and Development Administration and the Environmental Protection Agency and delineates the respective responsibilities of the two agencies in solid waste disposal R, D & D. These provisions effectively codify and expand a May 7, 1976 agreement by the two agencies. This section is virtually identical to a provision included in the Senate's ERDA authorization bill for Fiscal Year 1977 in a section authorizing loan guarantees for commercial demonstrations of similar types of technology. Together, then, the two sections, if enacted, will provide a single, uniform statutory scheme for the coordination of all of ERDA's and EPA's research, development and demonstration projects in solid waste disposal.

Importantly, the provisions in Section 4(b) also represent agreements by both the Chairmen of the Senate committees with jurisdiction over such projects and the leaderships of this Committee's responsible subcommittees, the Subcommittee on Environment and Atmosphere and the Subcommittee on Energy Research, Development and Demonstration. The provisions also are directly responsive to the recent recommendation of the House Committee on Government Operations in its June 30, 1976 report, "Solid Waste-Materials and Energy Recovery," that Congress consider legislation directing such ERDA and EPA coordination. The section, thereby, encompasses the full spectrum of Congressional and Executive Branch responsibility for the timely development of advanced solid waste disposal technology for the Nation.

We wish to note, as the Chairman and Ranking Minority Member of the Energy Research, Development and Demonstration Subcommittee, that this milestone is a direct result of the great spirit of compromise and cooperation with which Subcommittee Chairman George E. Brown, Jr. fashioned this legislation. We want to commend him for his initiative and to express respect for his faithfulness to such a positive approach to the legislative process in this Committee.

We would only add one final comment on the coordination issue. The Committee View ends by forcefully stating the Committee's desire that the agencies implement these provisions in good faith and effectively achieve the intended coordination and the Committee's intention to closely oversee that implementation. The two Subcommittees and our Full Committee have spent a great deal of time and effort in this Congress in addressing the coordination of ERDA and EPA R&D programs. There has been progress, as evidenced by the interagency agreement on solid waste disposal R&D and the section in this

bill. The time has now arrived for ERDA and EPA to achieve the intended coordination across the board in their R&D programs without any further Congressional action. The time is now for the two agencies to jointly attack the many complex and difficult energy and environmental problems which the Nation faces today and for the foreseeable future. We expect that that joint attack will be mounted in carrying out FY 1977 programs, and in preparing and presenting the FY 1978 program requests. Our FY '77 oversight and FY '78 authorization hearings will provide an opportunity for the agencies to demonstrate their joint, coordinated efforts and we will be fully expecting that result.

MIKE MCCORMACK.
BARRY M. GOLDWATER, JR.

○